5.33 } follow
5.39

SONY.

Electronic Book™ and Data Discman™

"Endversion"

Software Technical Specification

Version 1.0 - 6/10/91

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0. Changes from Version 0.4 to 1.0 Specification

Added

- Section 7: Menu Language File
- Section 8: Standard Information File Specification
- Section 9 CATALOG File
- Section 10: EB Disc Physical Format
    - All EB discs must be recorded in mode 2, form 1 format.
- Appendix E: Language File Specification
- Appendix F: Language Menus

Modified

Section 11: ISO 9660 File Structure

- Addition of Language File, CATALOG File and Standard Information File to file structure.

Section 20.2.2: Heading Text

- Heading text can be unlimited length, but the base case player will truncate to 28 characters.

Section 21.2.2.6: Text Format Control Codes

- Division Prohibit Start and Division Prohibit End Codes removed.
- New Line Code required before Indentation Code.
- Any sequence of bytes delimited by space (20H) will not be split between lines.
- Hidden Hyphen Code.
- Hard Space and Soft Space codes.
- Indent Code - to reset margin set to 00 00H.

Section 21.2.3: Display End Code

- Display End Code should be preceded by a New Line Code.

Expected Changes in the specification

There are no substantial additional changes expected in the specification. A future version of the specification will further define the menus used in non-English language discs.

1. Introduction

This document describes the data format for the EB disc CD-ROM used with the Sony Data Discman. This specification is for discs that are compatible with the international versions of Data Discman and is not compatible with the original DD-1 sold only in Japan. The international versions of Data Discman will have support for graphics as well as text. A different specification is to be used for discs that use the 2-byte JIS code and can display Japanese characters as well as alphabet.

The EB standard has been designed for use with the Sony Data Discman. The EB standard is being licensed to other hardware manufacturers. Discs made to the standard will also be fully compatible with players from other manufacturers as they become available. The Sony Data Discman is defined as the base case player. All discs must be fully compatible with the base case specification. It will also be possible to play EB format discs on PC based CD-ROM systems when retrieval software which is compatible with the EB standard is developed.

Sony shall not be liable for any possible discrepancy between this document and the final specification for Data Discman and the EB disc standard, nor for any incidental damage resulting from the use of this information.

2. References and Notation

2.1. References

"Yellow Book"
Specification from Sony and Philips that describes CD-ROM.

ISO 9660
Specifies standard CD-ROM logical file structure.

ISO 8859-1
Specifies standard character set used with the EB standard.

Sony Electronic Book Information Document
Describes Data Discman hardware and search methods with example screens.

2.2. Notation

Sixteen bit Binary Values
A 16 bit binary value should be stored with the most significant byte first.

Thirty-two bit Binary Values

A 32 bit binary value should be stored with the most significant byte first. A numerical value represented by the hexadecimal representation (st uv wx yz) should be recorded in a 4 byte field as (st uv wx yz).

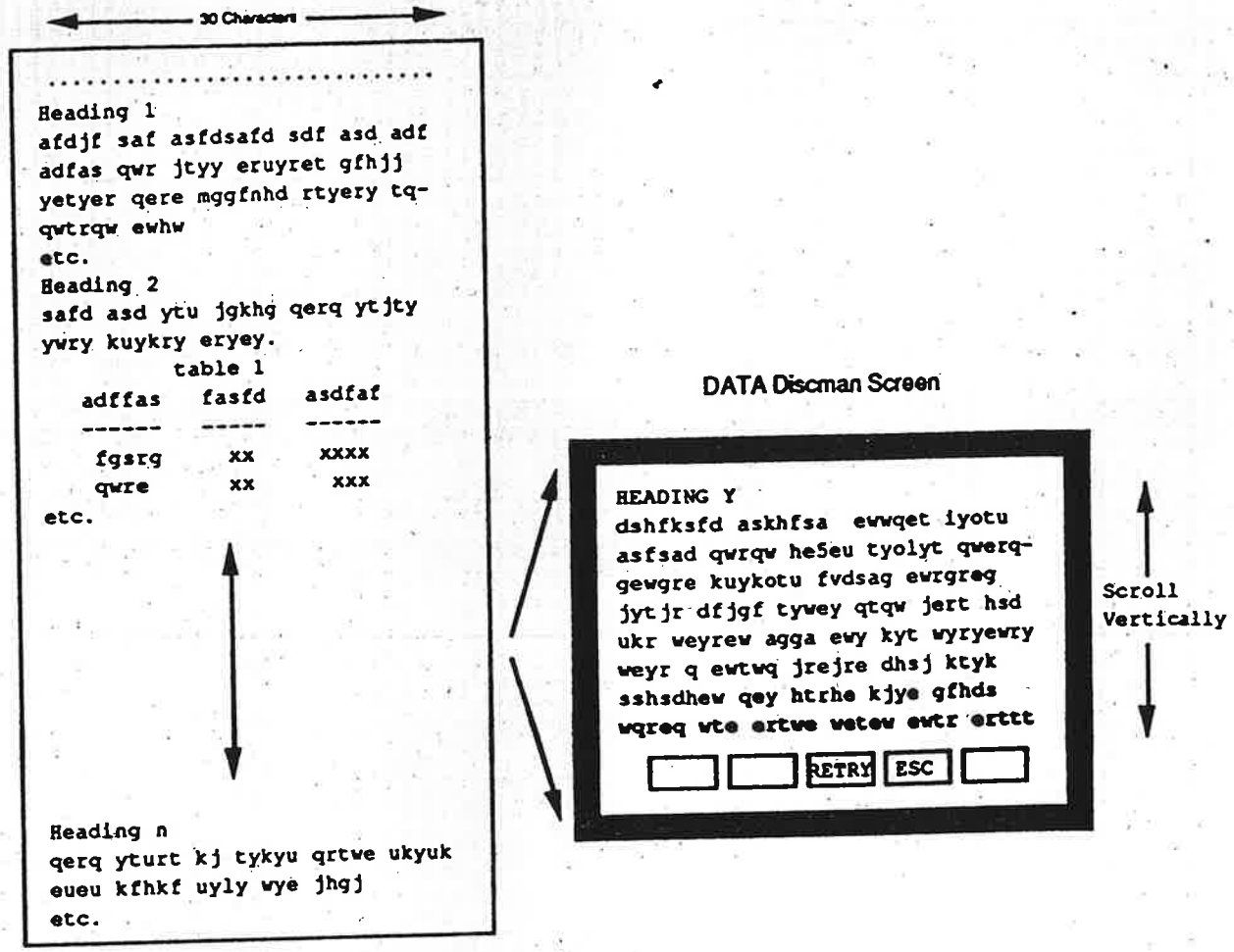
BCD Values

16 and 32 bit BCD values should be stored with the most significant byte first.

3. General Data Structure

The EB disc is used to organize and access discrete units of text-based and graphics-based information which can be searched for by a variety of methods. In general, the text-based information should be divided into individual records that consist of a heading describing the information, and the actual information. The information can be free text, a table, or a combination of the two. One or more graphics can also be associated with individual text records. The heading, text, and graphics will depend on the type of information to be published on the EB disc. The heading along with its associated text is referred to as a text segment. Copies of the headings are stored in an area separate from the main data to facilitate rapid searching. The headings are used when a search results in several text blocks which match the specification. The user chooses from the list of headings the desired text block to view. Hypertext-like links between arbitrary points in the text can also be created. Additionally links can be created which allow jumping from text to a graphics screen, a graphics screen to text, or from one graphics screen to another. In the case of a jump from a graphics screen to either text or another graphics screen, branching can be accomplished with up to 10 different branch directions.

ELECTRONIC BOOK DATA



For display on the base case screen, the heading should be 28 characters or less(when a list of headings is displayed, 2 characters of the screen width are used for an arrow to select the desired text segment). The text will be formatted to fit onto the 30 character wide base case screen; a variety of display control codes are provided to organize the data presentation. The screen for the base case player displays 10 lines of text, but the bottom line is reserved for "softkey" menus. Consequently, the EB information will be displayed in 9 lines, but it can be scrolled vertically to view the complete text.

4. Standard Search Methods

The EB disc standard includes six types of standard search methods. They are accessed by the user when the EB disc is first "opened". They are Word Search, Endword Search, Keyword Search, Multi Search, Menu Search, and Graphics Search. Each search method has its own index and associated list of headings.

The search methods have been chosen to provide a comprehensive set of search functions, while ensuring that the EB disc is easy to operate. The EB disc is designed to have a standardized user interface so that a minimum of training is needed to enable the user to easily use any available EB disc.

4.1. Word Search method

The Word Search method is used to find a specific text block based on the exact spelling of the word or words in the heading. The search software will find all words that begin with the sequence of letters that is input, so only the first part of the word needs to be input. Of course, if only a few letters are specified, a very long list of words which match the specification may result. Entries in the Word Search index must be unique. not true

4.2. Endword Search method

The Endword Search method works in a manner identical to the Word Search method, except, the search is based on the sequence of letters at the end of the word. The letters at the end of the word are input in normal (ie. frontwards) order. As in the Word Search method, the user is presented with a list of headings that match the specification. The more specific the specification, the shorter the list of choices. The indexing for the Endword Search method is arranged with the words spelled backwards to facilitate rapid searching. Entries in the Endword Search index must be unique.

4.3. Keyword Search method

The Keyword Search method is used to find text blocks that match between one and five keywords that the user inputs. The search mode supported on the Data Discman is a Boolean AND of the keywords entered. The keywords can be from the heading of the text block and/or from the text itself, depending upon how the search indexes are created. The keyword index would normally be an inverted tree index with irrelevant words filtered out.

4.4. Multi-Search method

When the Multi Search method is chosen, the user is presented with a screen with from one to four questions. One or more of the questions can be answered and appropriate text blocks will be found based on the answers to the questions. Each question can have a separate search index, the retrieval engine is based on a Boolean AND of the answers to the four questions. The questions can be answered either directly by typing in an answer, or an answer can be chosen from a list that the user can call up. The list system can be arranged in a hierarchical fashion.

4.5. Menu Search method

The Menu Search method uses a hierarchical series of menu lists to progress from a general category of information to a specific text block. The index for the Menu Search is arranged as a hierarchical tree.

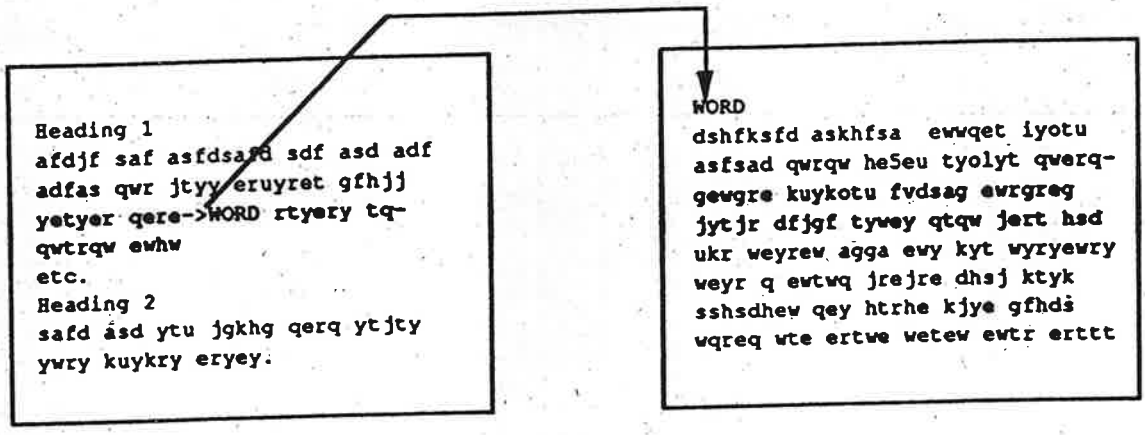
4.6. Graphics Search method

When the Graphics Search method is selected, the program jumps to an initial graphics screen. From that point progress is made by means of the linking capability between graphics screens, or from a graphics screen to text.

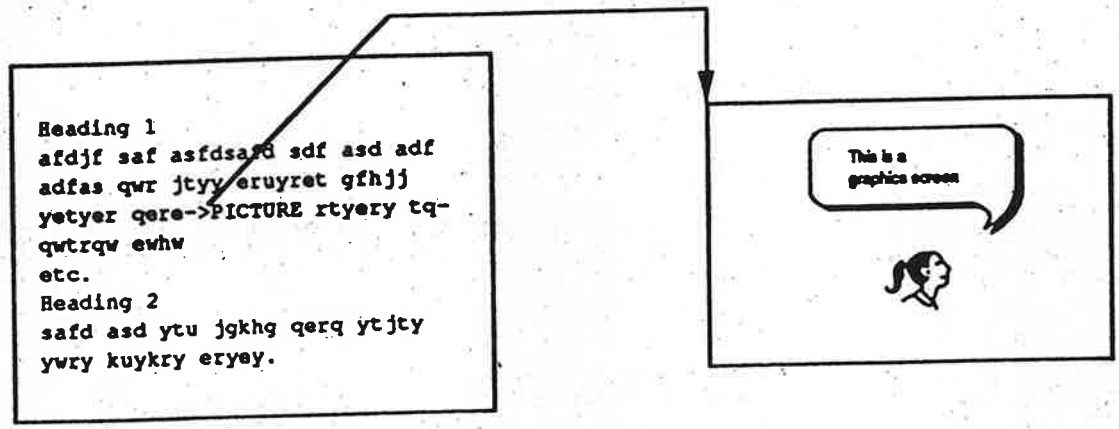
5. Hyperlinking

Links can be created that allow jumping from text to graphics, text to text, or graphics to graphics. Branched links can be created that allow jumps from the initial location (graphics screen or text) to one of ten destinations. The destination of the jump can be either a graphics screen or a section of text. Jumps can be chained forward in an unlimited fashion. It is possible to back up through the chain of links but the number of steps is limited by the size of the jump link buffer. In the case of the Data Discman, it is possible to back up through the preceding 10 links. für Duden B / Felixsohn

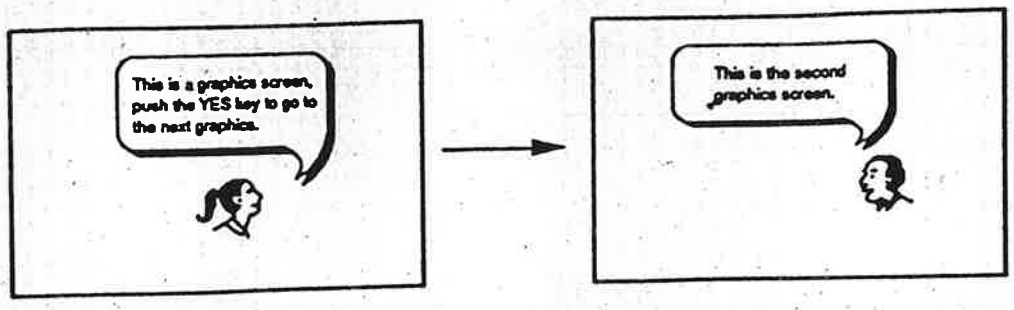
5.1. Text to Text Link (Consultation Search method)


Heading 1
afdjf saf asfdsafd sdf asd adf
adfas qwr jtyy eruyret gfhjj
yetyer qere->WORD rtyery tq-
qwtrqw ewhw
etc.
Heading 2
safd asd ytu jgkhg qerq ytjty
ywry kuykry eryey.
WORD
dshfksfd askhfsa ewwqet iyotu
asfsad qwrqw he5eu tyolyt qwerq-
gewgre kuykotu fvdsag ewrgreg
jytjr dfjgf tywey qtqw jert hsd
ukr weyrew agga ewy kyt wyryewry
weyr q ewtwq jrejre dhsj ktyk
sshsdhew qey htrhe kjye gfhds
wqreq wte ertwe wetew ewtr erttt

5.2. Text to Graphics Link

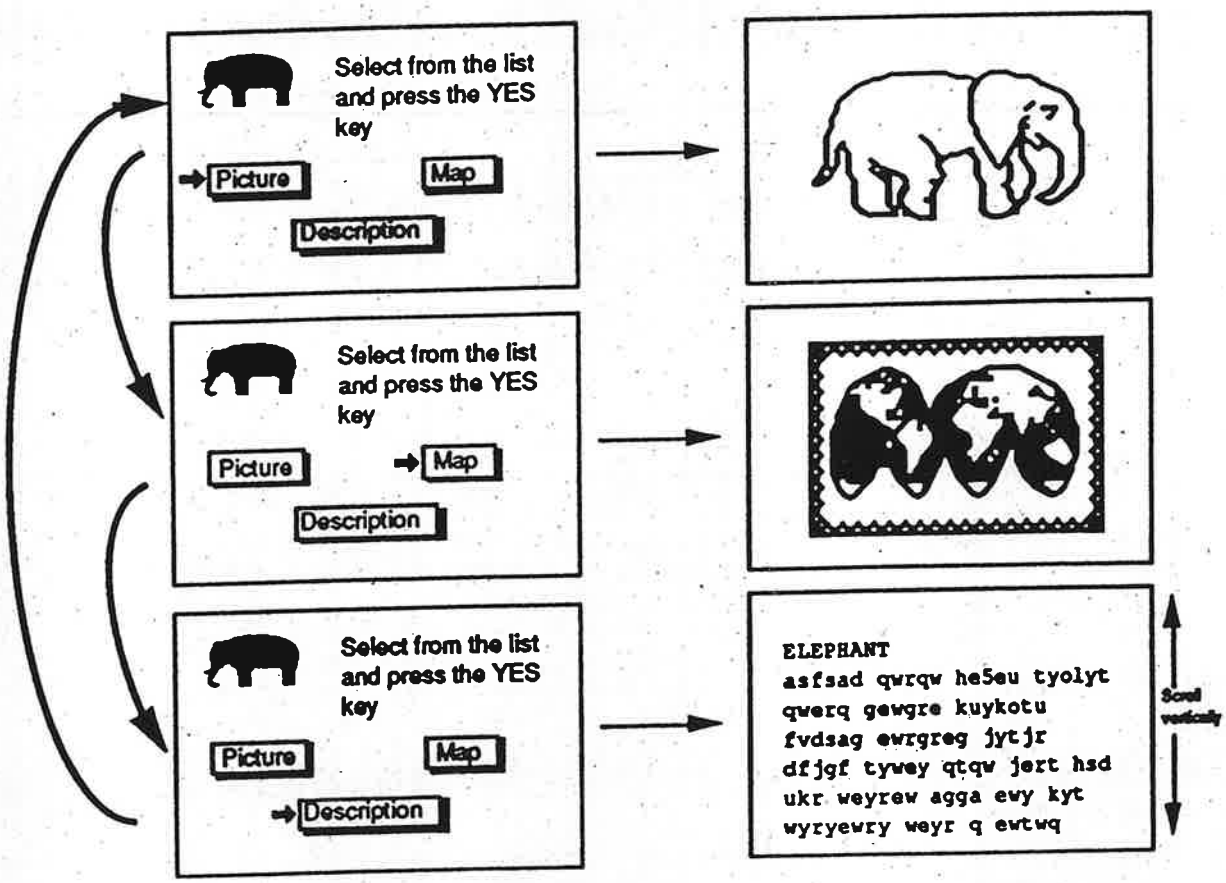


5.3. Graphics to Graphics Link



5.4. Branched Link from a Graphics Screen

A single graphics screen can have links to up to ten destinations. The destinations can be either additional graphics screens or a section of text. The desired jump is selected using the arrow keys on the Data Discman. A pointer icon on the screen indicates the selected link.



6. Character Set

6.1. Display Characters

6.1.1. Standard/Special Characters

An EB disc player must have a built in standard character set complying with ISO 8859-1. The characters are displayed as 8 by 16 pixel arrays (see appendix B). In addition to the standard character set, optional special characters can be included on an EB disc . Optional character font arrays are stored on the disc in the font blocks section of the file. The special characters are encoded in the data with a 2 byte code. Special characters can be included in the data, headings, or in the menus used for the Menu Search method or the Multi Search method.

6.1.2. Languages

The built in menus on an EB disc player can be displayed in a variety of languages. A code on the EB disc indicates the standard language of the disc and the menus automatically appear in that language. The user can optionally change the language if it is desired when the EB disc is "opened." The menu language strings are stored in the menu language file on the disc. This file must be included on all discs.

6.1.3. Japanese Language Discs

All versions of Data Discman hardware also have full support of Japanese language, including 16 x 16 pixel bit maps for Kanji (Chinese) and Kana (phonetic) characters. A disc which can display Japanese uses the 2 byte JIS code to represent characters instead of ISO 8859. Therefore the disc format is different from this specification. Japanese language input is accomplished by typing a word in Romaji; as the word is typed, the characters appear on the screen in Hiragana or Katakana. Publishers interested in publishing a disc with support of Japanese language should contact Sony for additional information.

6.2. Input Characters

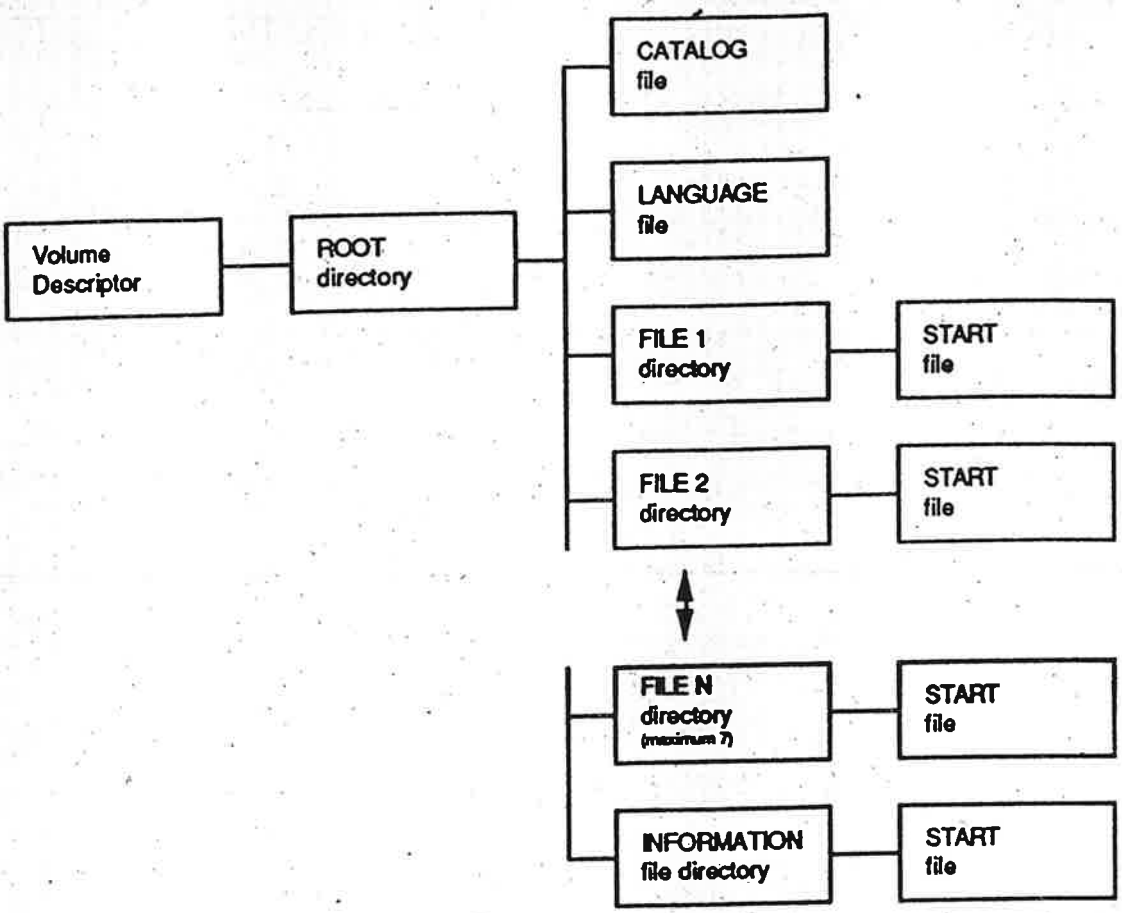
The number of input characters is more limited than the number of characters that can be displayed. This fact is important to consider when creating the search indexes, as the search keys must match the input characters exactly. The characters that can be used for input are '0' - '9', 'A' - 'Z', *space*, '-', 'Ä', 'Å', 'Æ','Ç', 'É', 'Ñ','Ö', 'Ø', 'Ü', and '8'. Note that only upper case letters can be input from the keyboard.

7. Menu Language File

A language file which contains the menu commands for controlling the search functions in a number of languages is required to be included on every EB disc. The formats of the screens, and the control sequence remains the same for every language. The menu language file contains a set of strings for every supported language. The strings from the selected language are loaded into RAM and displayed on the screen at the appropriate times. A standard menu language file will be provided from Sony; this language file is required on all discs.

7.1. File Location

The file should be located in the root directory and the name of the file should be "LANGUAGE".



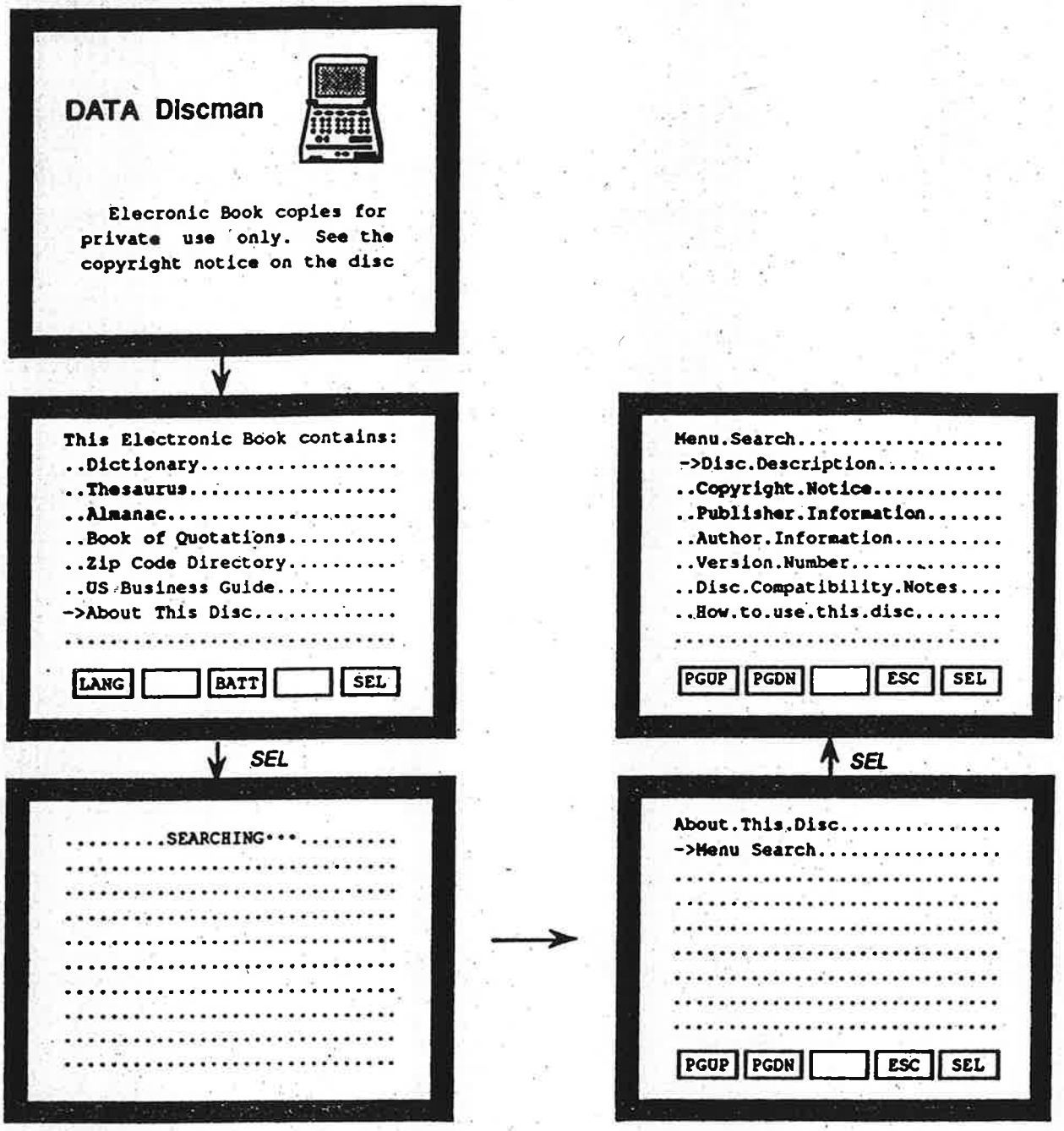
8. Standard Information File

Certain standard information pertaining to copyrights, version numbers, and instructions is required on all discs. This must be included in the standard format (including the naming of the volume and the format of the search method) so that all discs share a common method for accessing the data. The information should be in a separate EB volume which can be accessed when the disc is first started. The volume should use the Menu Search method to find the required types of information. The hierarchical tree of the search method is standardized, but the actual format of the data that is displayed (text blocks) can be determined by the publisher. The language of the Standard Information File is determined by the publisher.

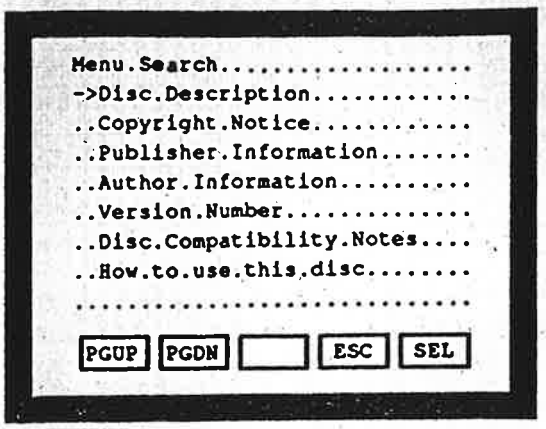
8.1. Example Screens for Standard Information File on Data Discman

The information in the Standard Information File will be accessed on Data Discman in the following manner.

8.1.1. Start-up Screens



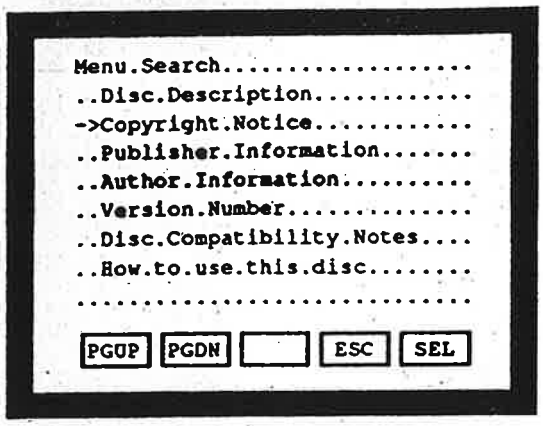
8.1.2. "Disc Description"



Disc Description

This section should give a general description of the contents of the disc and how it is used.

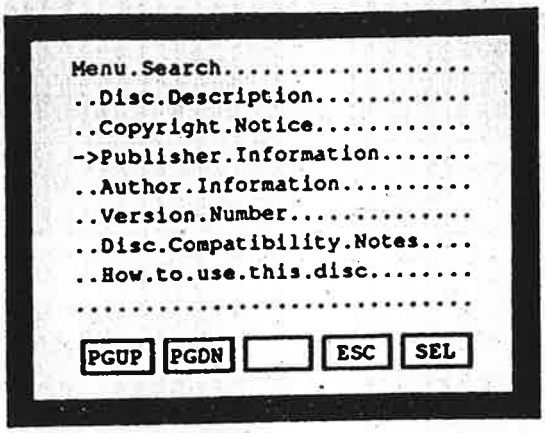
8.1.3. "Copyright Information"



Copyright Information

This section should provide any copyright information that is required by the publisher. The opening screen of Data Discman says "Electronic Book copies for private use only. See the copyright notice on the disc."

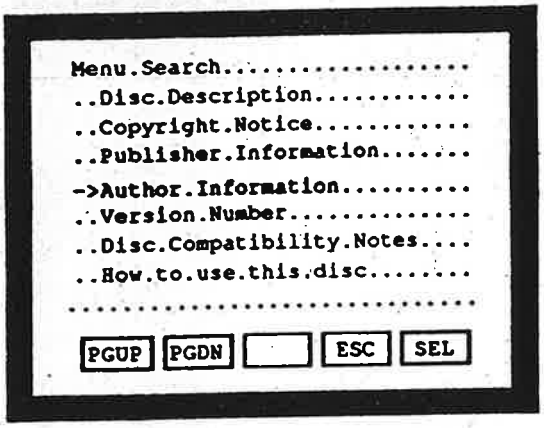
8.1.4. "Publisher Information"



Publisher Information

This section can provide any desired information about the disc publisher.

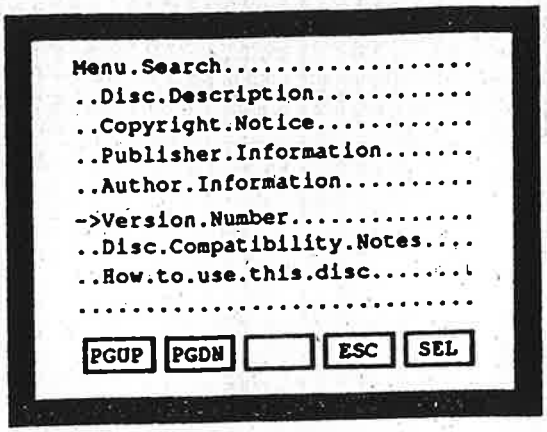
8.1.5. "Author Information" or "Editor Information"



Author Information

Optionally, this section can be labeled "Editor Information". This section provides any desired information about the author or editor of the disc.

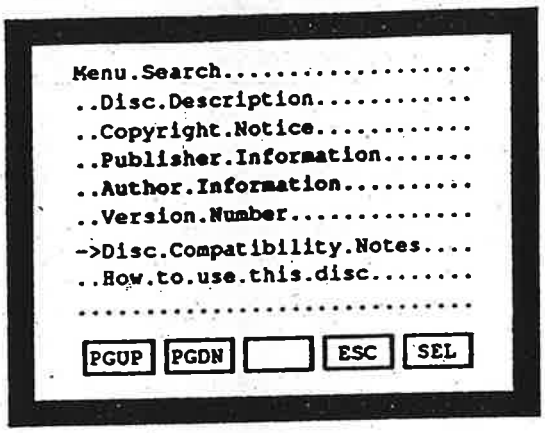
8.1.6. "Version Number"



Version Number

This section should provide a version number of the disc in the format that is desired by the publisher. This version number can be used to keep track of disc versions during development as well as the updates of commercial products.

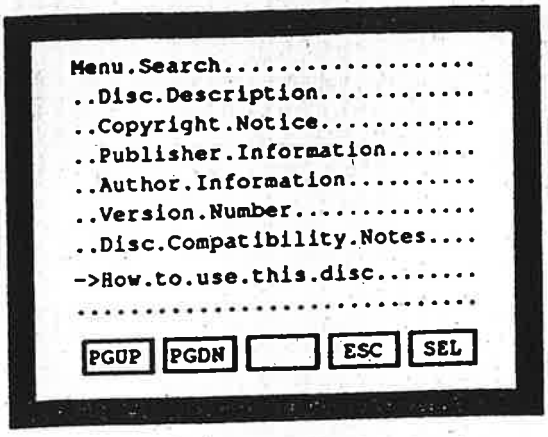
8.1.7. "Disc Compatibility Notes"



Disc Compatibility Notes

This section will not be used initially with discs made to version 1.0 of the technical specification. In the future, this section will be used to describe the use of advanced features in different hardware platforms.

8.1.8. "How to use this disc"



How to use this disc

This section should provide a complete description of the use of the disc. It should describe the kinds of data available, the organization of the data, and the search methods that can be used to access the data. The specific format can be determined by the publisher.

8.1.9. General Information EB Volume Title

The EB volume title should be as follows:

Language	*EB Volume Name*
English	About this disc
French	NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE
German	
Italian	
Spanish	
Danish	
Finnish	
Swedish	
Norwegian	
Dutch	
Portuguese	

8.1.10. Menu Search Method Categories

The menu terminology is standardized for English, French, German, Italian, Spanish, Danish, Finnish, Swedish, Norwegian, Dutch, and Portuguese.

8.1.10.1 French Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*French Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.2 German Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*German Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.3 Italian Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Italian Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.4 Spanish Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Spanish Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.5 Danish Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Danish Menu*

Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.6 Finnish Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Finnish Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.7 Swedish Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Swedish Menu*
Disc Description	

Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.8 Norwegian Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Norwegian Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.9 Dutch Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Dutch Menu*
Disc Description	
Copyright Notice	

Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

8.1.10.10 Portuguese Menus

NON-ENGLISH NAMES WILL BE AVAILABLE WITH THE NEXT RELEASE

English Menu	*Portuguese Menu*
Disc Description	
Copyright Notice	
Publisher Information	
Author Information	
Editor Information	
Version Number	
Disc Compatibility Notes	
How to use this disc	

9. CATALOG File

A special file must be included on the disc to reference the titles of the EB volumes on the disc. The ISO-9660 standard allows a very limited set of characters to be used for file names; the catalog file allows any characters in the ISO-8859 character set to be used in the title of an EB volume.

9.1. CATALOG File Format

Language File Menu Commands

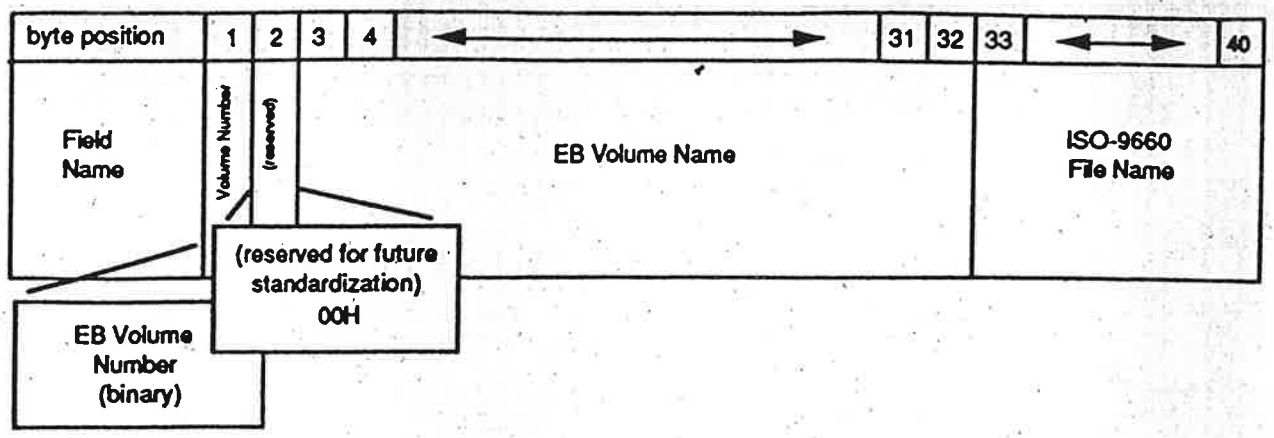
Byte Position	Field Name	Content
1 to 2	Number of EB Volumes	binary number
3 to 16	(reserved for future standardization)	00H
17 to 56	CATALOG File Entry 1	(see below)
17	EB Volume Number	01H
18	(reserved for future standardization)	00H
19 to 48	EB Volume 1 Name	ISO-8859 char. string
49 to 56	ISO-9660 File Name	Directory Name
57 to 96	CATALOG File Entry 2	(see below)
57	EB Volume Number	02H
58	(reserved for future standardization)	00H
59 to 88	EB Volume 2 Name	ISO-8859 char. string
79 to 96	ISO-9660 File Name	Directory Name
	•	
	•	
	•	

9.1.1. Number of EB Volumes

The total number of EB volumes (including the special information volume) on the disc. Represented as an 8 bit binary number.

9.1.2. CATALOG File Entry

CATALOG File Entry



9.1.2.1 EB Volume Number

An EB disc can contain from 1 to 8 separate EB volumes (including the special information volume). Each EB volume is assigned a number. Numbering must begin with 1 and proceed to the final EB volume uninterrupted. It is stored as an 8 bit binary number.

9.1.2.2 EB Volume x Name

The EB volume name is the name that will appear on the screen when the disc is first inserted. Any characters in ISO-8859 may be used. The maximum length of the name is 28 bytes; if less than 28 bytes are used, the remainder should be filled with 00H.

9.1.2.3 ISO-9660 File Name

The actual name of the file in the ISO-9660 file system. Allowed characters are as specified in ISO-9660 (ISO-646 characters). The maximum length of the name is 8 bytes; if less than 8 bytes are used, the remainder should be filled with 00H.

10. EB Disc Physical Format

The EB disc physical data structure should comply with the CD-ROM specification ("Yellow Book"). The physical size of the disc must be 8 cm. and the disc must be packaged in the EB standard caddy.

10.1. Yellow Book Physical Format

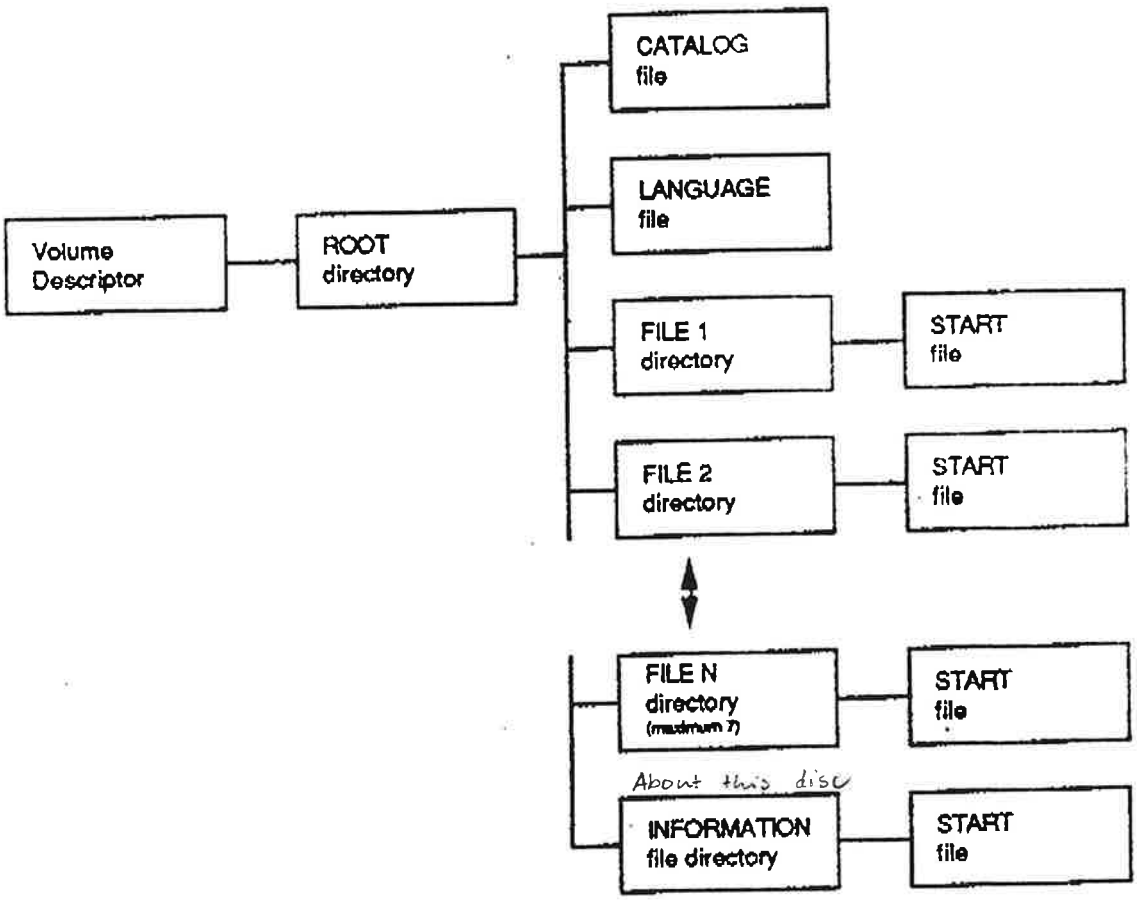
EB discs must be recorded in mode 2, form 1.

10.2 Trademark

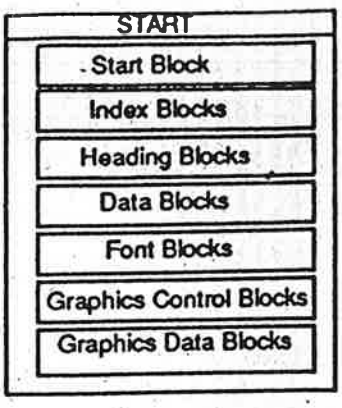
A logo trademark will be used to indicate compatibility between software and hardware. The the use of this logo in a specified manner on the disc, and the associated packaging will be controlled by a licensing agreement to use the data structure, logo, etc.

11. ISO 9660 File Structure

The logical data structure of an EB disc complies with ISO-9660. The disc is divided into logical blocks of 2048 bytes. Groups of logical blocks are used for (1) the disc Volume Descriptor, (2) the Root Directory, (3) Sub Directories, and (4) EB disc files. The Root Directory of the disc should point to the CATALOG File, the LANGUAGE File and up to eight EB application directories (including the Special Information File). Each application directory is an independent EB disc volume. Each application directory contains a single file which is named "START". This file contains all of the data and search indexes for that volume. The logical file structure should be as follows:



All the information for a single EB volume is contained in the START file. The START file contains the following sections:



11.1. Volume Descriptor

The Volume Descriptor should be recorded as specified in ISO 9660 with the following notes on specific field information required for the EB disc format.

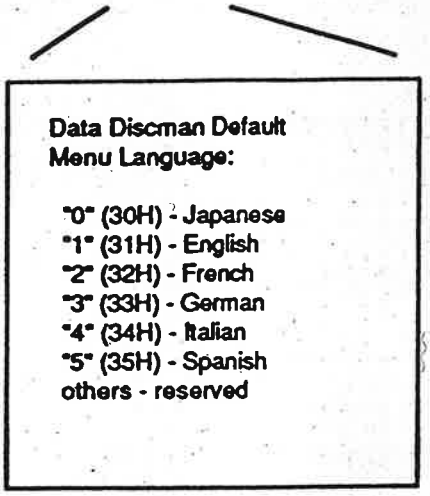
Volume Set Size (byte position 121 to 124)
Only single volume sets are allowed.

Logical Block Size (byte position 129 to 132)
The logical block size should be set to 2048 (800H).

Application Use (byte position 884 to 1395)
The Application Use field should be specified as follows:

APPLICATION USE FIELD

byte position	884	885	886	887	888	889 - 1395
Field Name	"E" 45H	"B" 42H	Data Discman Default Menu Language:	"1" 31H	"1" 31H	(reserved for future standardization) 00H



The default menu language field specifies the language that the control menus will be in when EB disc is started. Only the above listed languages are available as default menu languages. The user has the option to change the menu language manually. The Data Discman can also support Japanese if the disc is programmed to the JIS code version of the EB disc specification.

11.2. Directory Records

Each individual EB volume is contained in a directory pointed to from the root directory of the disc. A "catalog" file contains the names of the EB volumes that will appear on the screen. The CATALOG file also contains the names of the corresponding directory. Under the directory there should be one file with the File Identifier "START"; this file contains the data and indexes for that EB volume. Note that a EB disc file may not be recorded in interleaved mode.

12. EB Volume Organization

12.1. Types of Blocks

Each EB volume on the disc is located in a single file of contiguous blocks. There are seven basic sections:

12.1.1. Start Block

The Start Block is the first block in the EB volume file. It consists of general information, as well as pointers to the other blocks. There is only one start block in the file and it must be the first block.

12.1.2. Index Blocks

The index blocks contain the indexes for the five primary search methods, Word Search, Endword Search, Keyword Search, Multi Search, and Menu Search. The indexes are used to find specific text segments for each of the five primary search methods. There are the following types of indexes:

- *Indexes*
  - Word Search index
  - Endword Search index
  - Keyword Search index
  - **Menu Search index**
  - *Multi Search Indexes*
    - Multi Search table
    - *Multi Search method 1, question 1*
      - index
      - reference table (optional)
    - *Multi Search method 1, question 2*
      - index
      - reference table (optional)
    - *Multi Search method 1, question 3*
      - index
      - reference table (optional)
    - *Multi Search method 1, question 4*
      - index
      - reference table (optional)

- *Multi Search method 2, question 1*
  - index
  - reference table (optional)

etc.

Notes:

1. There may be up to five Multi Search methods for each EB volume (each with different questions). Each Multi Search method can have up to four questions. Each question for each Multi Search can have its own index.

2. There are two different types of Multi Search indexes: (a) Word Search type index, and (b) Multi Search type index. If the Multi Search type index is used a reference table must be provided to give answers to the question.

3. The same index can be used for different search methods or different questions in the Multi Search indexes where appropriate by having the pointers point to the same index.

12.1.3. Heading Blocks

The heading blocks contain copies of the headings to the individual text blocks. There are separate heading sections for each of the primary search methods. The headings are displayed on the screen when several text segments match the search specification, the user then selects the one to be displayed.

- *Heading Lists*
  - Word Search heading list
  - Endword Search heading list
  - Keyword Search heading list
  - Menu Search heading list
  - Multi Search Heading Lists
    - *Multi Search method 1, question 1*
      - heading list
    - *Multi Search method 1, question 2*
      - heading list
    - *Multi Search method 1, question 3*
      - heading list
    - *Multi Search method 1, question 4*

• heading list

etc.

Notes:

1. There may be up to five Multi Search methods for each EB volume volume (each with different questions). Each Multi Search method can have up to four questions. Each question for each Multi Search can have its own heading list.

2. The same heading list can be used for different search methods or different questions in the Multi Search indexes where appropriate by having the pointers point to the same heading list.

12.1.4. Data Blocks

The data blocks contain the actual text of the text segments as well as the headings. Embedded in the data are control codes to affect the data display on the screen and pointers for the Consultation Search method. There should be only one set of contiguous data blocks.

12.1.5. Font Blocks

The font blocks contain bit maps for any non-standard characters that the publisher wishes to include in an application. There should be only one set of contiguous font blocks. The first block in the group should be the font control block.

12.1.6. Graphics Data Blocks

This section contains the actual graphics images as well as a data table that specifies that types of graphics images contained on the disc. The EB specification requires that 256 x 200, monochrome, uncompressed images be stored to be compatible with the base case player. It is also possible to store other types of images. This feature is included primarily to allow for future extension of the EB specification.

12.1.7. Graphics Control Blocks

This section of the file contains the graphics data structures (referred to as "MIED"s - Managing Information for Extended Data) that provide for linking one graphics bit map to another.

12.2. Ordering of Blocks

An EB volume file contains the above sections. Each section should be contained in contiguous blocks. A pointer to the first block of a section and the total number of blocks in that section is contained in the start block or in the Multi Search table. The start block must be the first block in the file. The ordering of the other sections is determined by the publisher based on performance issues. For fastest performance it is important to minimize the distance the optical read head of the CD-ROM must move in frequent operations. In general this means that for each search method the index and its associated heading list should be next to each other.

13.3.2. Location of the Extent

The location of the extent specified by its block number in the file. The Start Block in the file is block number 1.

13.3.3. Total Number of Blocks

The total number of blocks in the section of the file specified in this entry.

13.3.4. Retrieval Software Standard Version

Specifies the version of the retrieval software to be used. At this point it should be set to 01H.

14. Index Blocks

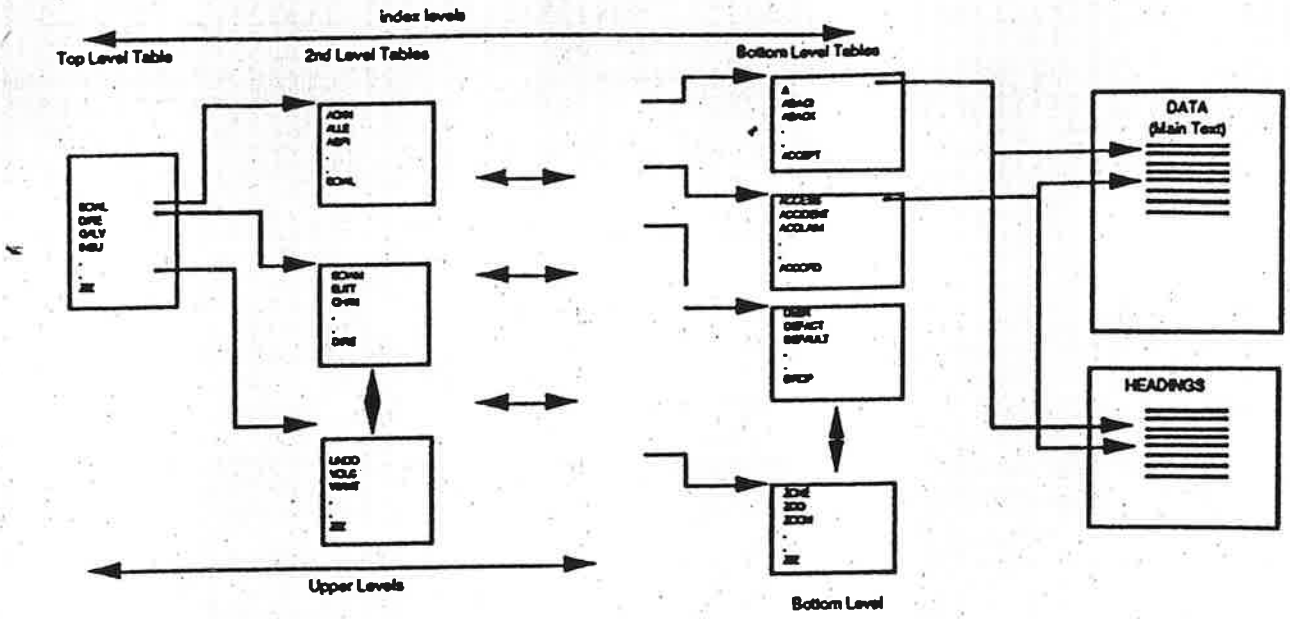
There are separate indexes for each of the primary search methods: Word Search, Endword Search, Keyword Search, Menu Search, and Multi Search. The search algorithm is based on the ISO 8859 code of an entry and an exact match is required. When characters are entered via the keyboard, only upper case letters, numbers, space, hyphen, and a few special European characters are allowed so entries in the index should in general include only these characters. When a reference table is used in the Multi Search method other characters can be used.

There are two types of indexes used. The Word Search, Endword Search, Keyword Search, and Multi Search methods use balanced tree indexes to find information. The index structure in each case is similar, but there are minor variations. The Menu Search method uses a tree structured hierarchical search index. A similar index is used in the Multi Search to create a reference table.

14.1. Balanced Tree Index Type

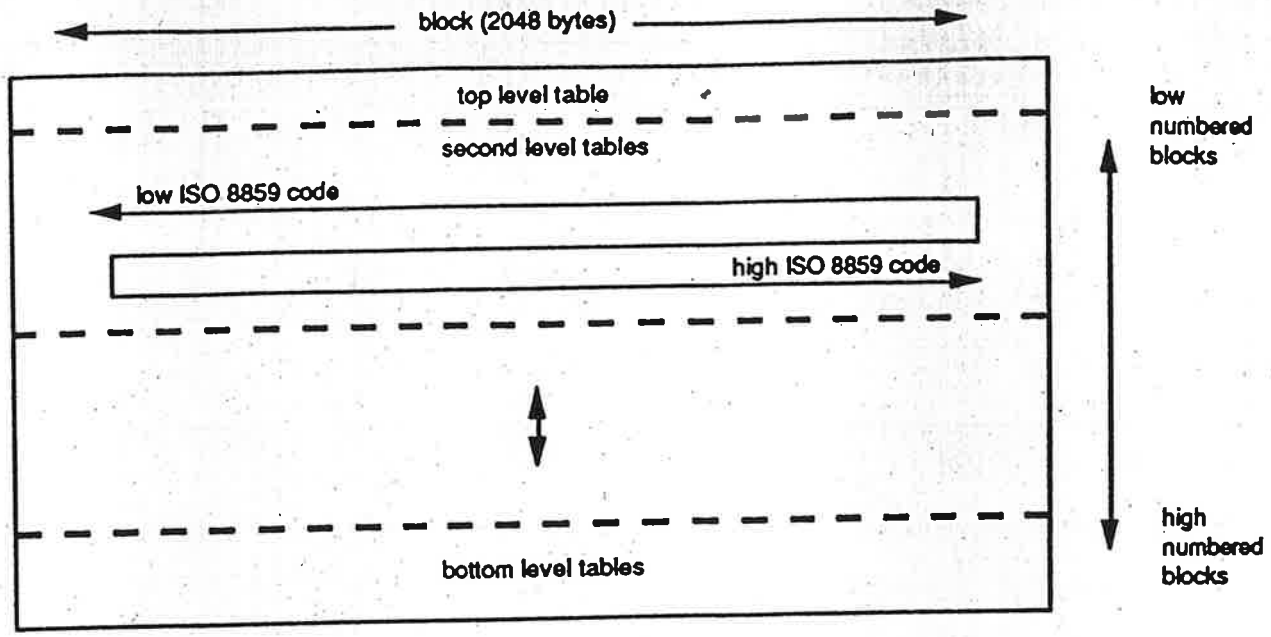
The tree consists of a hierarchy of tables, with upper level tables pointing to lower level tables. The top level table is pointed to from the start block (or from the Multi Search Table in the case of the Multi Search index). The number of levels in the tree and the number of entries in each table is not limited. The upper levels of the tree have a fixed entry length, with the maximum being 50 characters. The lowest level of the tree can have either fixed length entries or variable length entries. The maximum length of the variable length entries is 50 characters. Within a level of the tree, the entries are arranged in ISO 8859 order. An upper level of the tree contains the final entries of the tables in the level below. Each entry in an upper level table consists of a string and an address pointer to the next lower level table. Entries in the bottom level consist of strings, a pointer to the data, and a pointer to the heading.

14.1.1. Balanced Tree Index Logical Structure

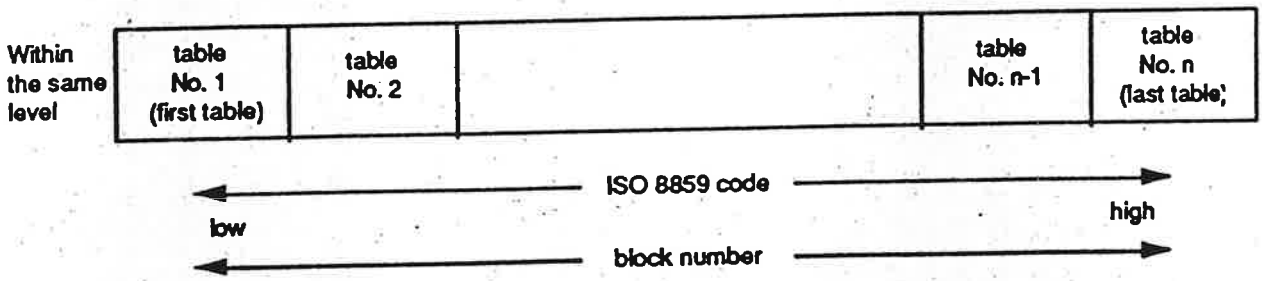


14.1.2. Balanced Tree Index Physical Structure

The tables for a balanced tree index must be in contiguous blocks on the disc. The first block in the index is pointed to from the start block entry for the appropriate search index. The index must begin with the top level table and end with the bottom level tables. Each level needs to be in contiguous blocks, and the tables must be ordered from top to bottom in low numbered blocks to high numbered blocks.



Within a table, the entries must be ordered from low numbered ISO 8859 code to high numbered ISO 8859 code. The tables within a level must also be ordered from low numbered ISO 8859 code to high numbered ISO 8859 code.

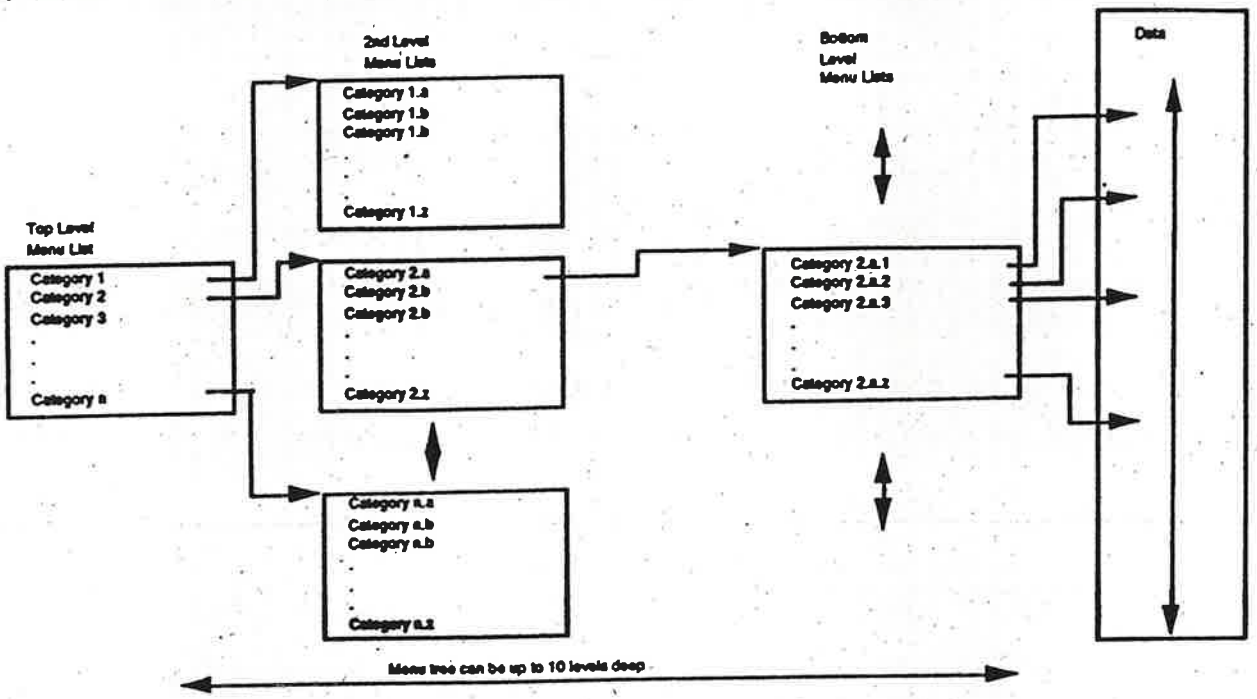


14.2. Menu Tree Index Type

The menu tree also consists of a hierarchy of tables, with upper level tables pointing to lower level tables. The top level table is pointed to from the start block(or from the Multi Search Table in the case of the Multi Search reference table). The number of levels in the tree is limited to 10, and the maximum number of entries in each table is limited to 200. The entries in the tree should have a maximum length of 28 bytes (this is because the display on the base case player is 30 characters wide and the arrow to select on entry is two characters wide) . Within a level of the tree, the entries cab be arranged in any order. Each entry in an upper level of the tree consists of the text that will appear on

the screen and a pointer to the beginning of the next lower level table. Each entry in an upper level table consists of a string and an address pointer to the next lower level table. Entries in the bottom level consist of a string and a pointer to the data. In the case of a reference table for a Menu Search, the bottom level pointer is not needed and it is filled with 00H.

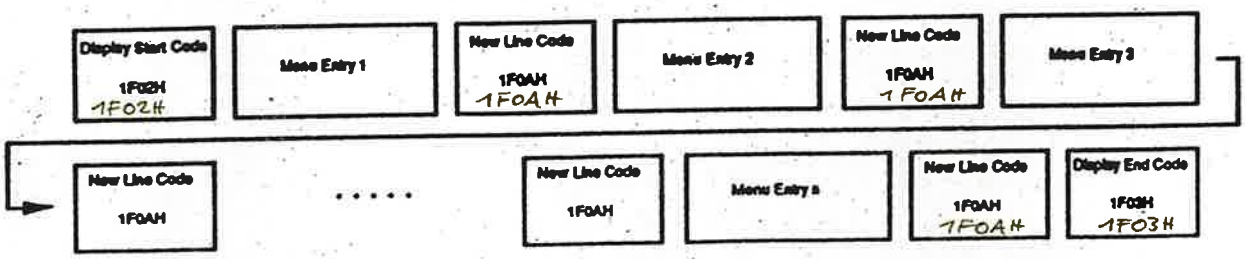
14.2.1. Menu Tree Index Logical Structure



14.2.2. Menu Tree Index Physical Structure

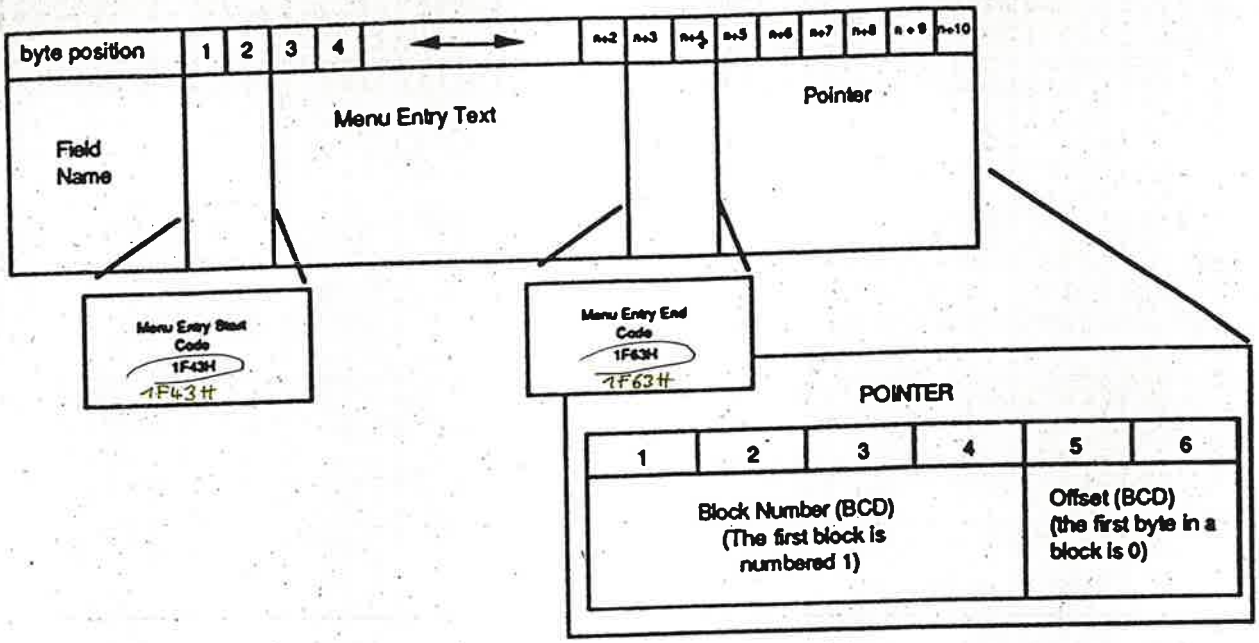
A menu tree index consist of a series of text lists which are chained together. Each text list is referred to as a menu list, and the entries in the list are referred to as menu entries. The start block (or the Multi Search Table in the case of a reference list) points to the beginning of the first menu; this should be at the beginning of a block. Upper level menu entries point to lower level menu entries.

MENU LIST PHYSICAL STRUCTURE



14.2.3. Menu Entry Format

MENU ENTRY PHYSICAL STRUCTURE



14.2.3.1 Menu Entry Start Code

This code indicates the beginning of a menu. The first byte of this code in the top level menu should be pointed to from the start block (or the Multi Search table in the case of a Multi Search reference table). In lower level menus, the first byte in the Menu Entry Start code is pointed to from the next higher level menu. The code is 1F43H.

14.2.3.2 Menu Entry Text

This is the text that will appear on the screen when the menu is displayed. The entries cannot be more than 28 bytes in length. Any characters in the normal character set, or special characters may be used.

14.2.3.3 Menu Entry End Code

This code indicates the end of the text for a menu entry. The code is 1F63H.

14.2.3.4 Pointer

For upper level menu entries, the pointer points to the Display Start code of the next lower level menu. For bottom level entries in a Menu Search index, the pointer points to the Heading Start code of the appropriate text segment. For bottom level entries in a reference table for a Multi Search, the pointer should be filled with 00H. Note that the pointer is BCD, not binary as in the case of the

balanced tree type indexes. For the block number pointer, the first block in the file is block number 1. For the offset pointer, the first byte in a block is byte number 0.

14.2.4. Block Boundaries

There are no limitations concerning how entries that cross block boundaries should be split, they can be split at any location.

14.2.5. Margin

After the final entry in a menu index, the remainder of the final block should be filled with 00H.

15. Word Search Index

The Word Search index is used to find text segments based on the exact spelling of the heading. Only the beginning letters need to be entered, the search algorithm will find all text segments that begin with the entered sequence of letters. Of course, if only a few letters are entered a long list of matching entries may result.

15.1. Word Search Index Block

WORD SEARCH INDEX BLOCK		
Byte Position	**Field Name**	**Content**
1	Attribute	8 bits
2	Word Length	binary number
3 to 4	Number of Entries in this Block	binary number
5 to x	Word Search Entry 1	see Word Search Entry Table
•	Word Search Entry 2	see Word Search Entry Table
•	•	•
•	•	•
•	•	•
y to 2048	Margin	00

15.1.1. Attribute

The attribute byte contains the following flags.

ATTRIBUTE BYTE		
Bit Position	Field Name	Content
1 (LSB) to 4	(reserved for future standardization)	0
5	Group Entry (0 = no; 1 = yes)	0
6	Last Table in Level (0 = no; 1 = yes)	flag
7	First Table in Level (0 = no; 1 = yes)	flag
8	Bottom Level Block (0 = no; 1 = yes)	flag

Note: If there is only one table in a level then both the First Table in Level flag and the Last Table in the Level flag should be set to "1".

For the Word Search method, entries are always single entries (ie. not group entries). Therefore, each entry in the Word Search index must be unique.

15.1.2. Word Length

Specifies the length of the words in the entries in this block. The maximum word length is 50 characters. "00" indicates that the block contains variable length word entries. For the Word Search method the upper levels are always of fixed length and the bottom level can be either variable or fixed.

15.1.3. Number of Entries In this Block

Specifies the number of entries in the present block.

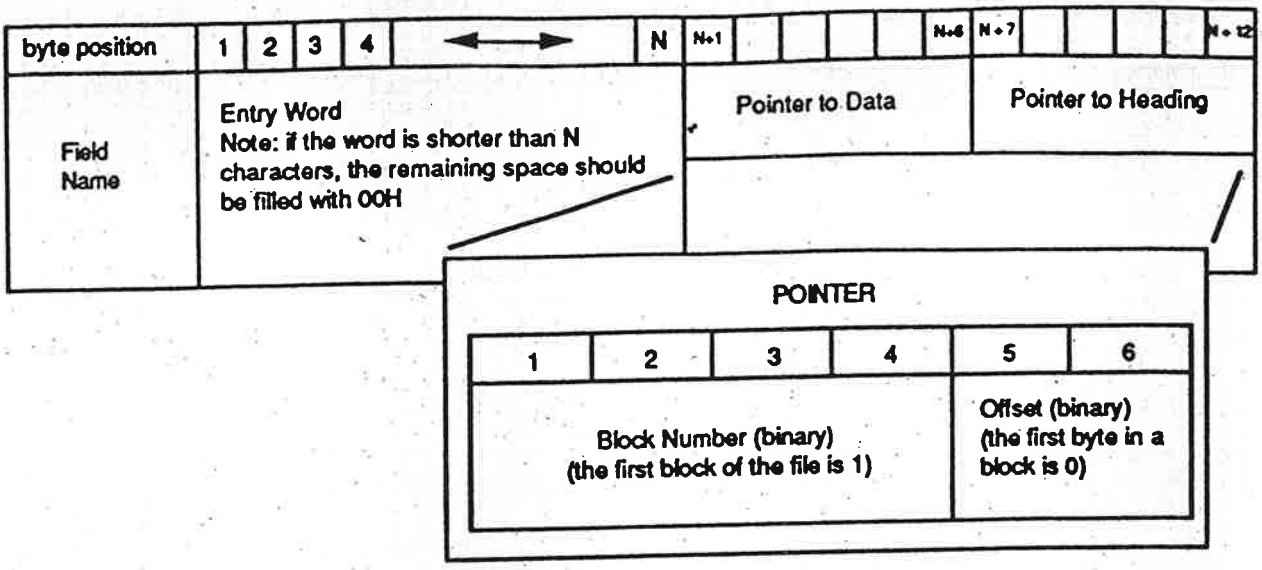
15.1.4. Word Search Entry

There are three types of entries in the Word Search index. Upper level entries are always of a fixed length and point to lower level tables. Entries at the bottom level can either be fixed length or variable length and point to data and headings.

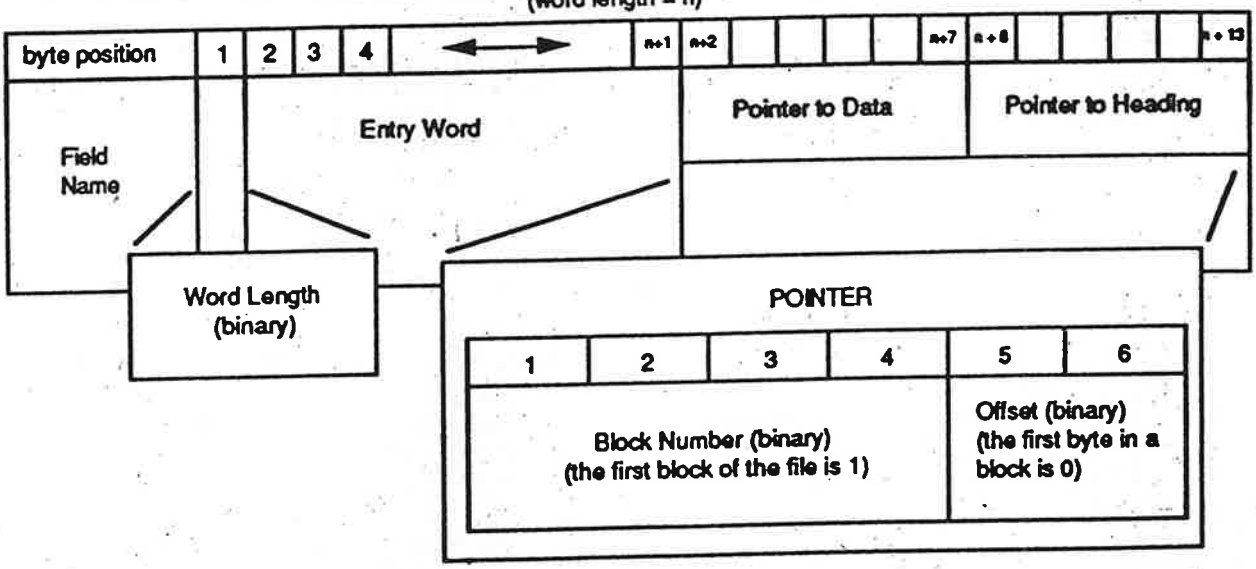
WORD SEARCH ENTRY - UPPER LEVEL WITH WORD LENGTH = N

byte position	1	2	3	4	◄——►	N	N+1	N+2	N+3	N+4
Field Name	Entry Word (Last entry of the next lower table) Note: If the word is shorter than N characters, the remaining space should be filled with 00H						Block number of the next lower level index block (binary number)			

WORD SEARCH ENTRY - BOTTOM LEVEL WITH FIXED WORD LENGTH = N



WORD SEARCH ENTRY - BOTTOM LEVEL WITH VARIABLE WORD LENGTH
(word length = n)



15.1.5. Margin

A block must include only complete entries. If there is not enough room to fit an entry into the end of a block, it should be begun in the next block and the remaining space should be filled with 00H.

16. Endword Search Index

The Endword Search is used to find text segments based on the spelling at the end of the heading. It is used to find all the words that end in a particular sequence of letters. As in the case of the Word Search method, it is possible to enter only a few letters and get a match.

16.1. Endword Search Index Block

The Endword Search index has a structure identical to that used for the Word Search method. However, in this case the entry strings are spelled from the end forward.

17. Keyword Search

The Keyword Search method is used to find an entry based on from one to five keywords. All text segments that are indexed with all of the keywords will be found. The Keyword Search is a Boolean AND function. When the search is run, five separate searches of the index are performed and the matching text segments are displayed. The Keyword Search index is similar to that used for Word Search and Endword Search. It differs in the capability for a particular entry to appear in many text segments. This is referred to as a group entry. A group entry consist of a parent entry and a number of child entries.

17.1. Keyword Search Index Block

KEYWORD SEARCH INDEX BLOCK		
Byte Position	Field Name	Content
1	Attribute	8 bits
2	Word Length	binary number
3 to 4	Number of Entries in this Block	binary number
5 to x	Keyword Search Entry 1	see Keyword Search Entry Table
•	Keyword Search Entry 2	see Keyword Search Entry Table
•	•	•
•	•	•
•	•	•
y to 2048	Margin	00

17.1.1. Attribute

The attribute byte contains the following flags.

ATTRIBUTE BYTE		
Bit Position	Field Name	Content
1 (LSB) to 4	(reserved for future standardization)	0
5	Group Entry (0 = no; 1 = yes)	flag
6	Last Table in Level (0 = no; 1 = yes)	flag
7	First Table in Level (0 = no; 1 = yes)	flag
8 (MSB)	Bottom Level Block (0 = no; 1 = yes)	flag

Note: If there is only one table in a level then both the First Table in Level flag and the Last Table in the Level flag should be set to "1".

For the Keyword Search method entries may be single or group entries. Single entries point to only one text segment; group entries point to many (the number is unlimited) text segments.

17.1.2. Word Length

Specifies the length of the words in the entries in this block. The maximum word length is 50 characters. "00" indicates that the block contains variable length word entries. For the Keyword Search index the upper levels are always of a fixed length and the bottom level is always variable length.

17.1.3. Number of Entries in this Block

Specifies the number of entries in this block. A group entry consists of a parent and a number of children; the parent and each child count as separate entries.

17.1.4. Keyword Search Entry

There are three types of entries in the Keyword Search index. Upper level entries are always of a fixed length and point to lower level tables. Entries at the bottom level are always variable length and point to data and headings. Bottom level entries can be either group entries that can point to several text segments or single entries that point to a single text segment.

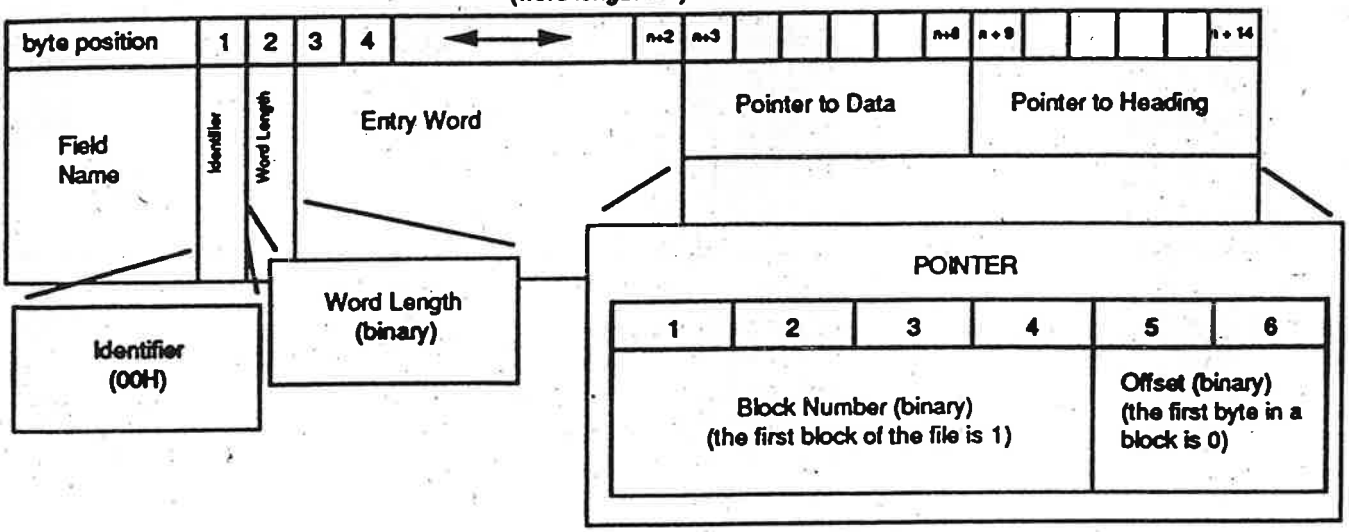
17.1.4.1 Keyword Search Entry - Upper Level

KEYWORD SEARCH ENTRY - UPPER LEVEL WITH WORD LENGTH = N

byte position	1	2	3	4	⟷	N	N+1	N+2	N+3	N+4
Field Name	Entry Word (Last entry of the next lower table) Note: if the word is shorter than N characters, the remaining space should be filled with 00H						Block number of the next lower level index block (binary number)			

17.1.4.2 Keyword Search Entry - Bottom Level with Single Entry

KEYWORD SEARCH ENTRY - BOTTOM LEVEL WITH SINGLE ENTRY
(word length = n)



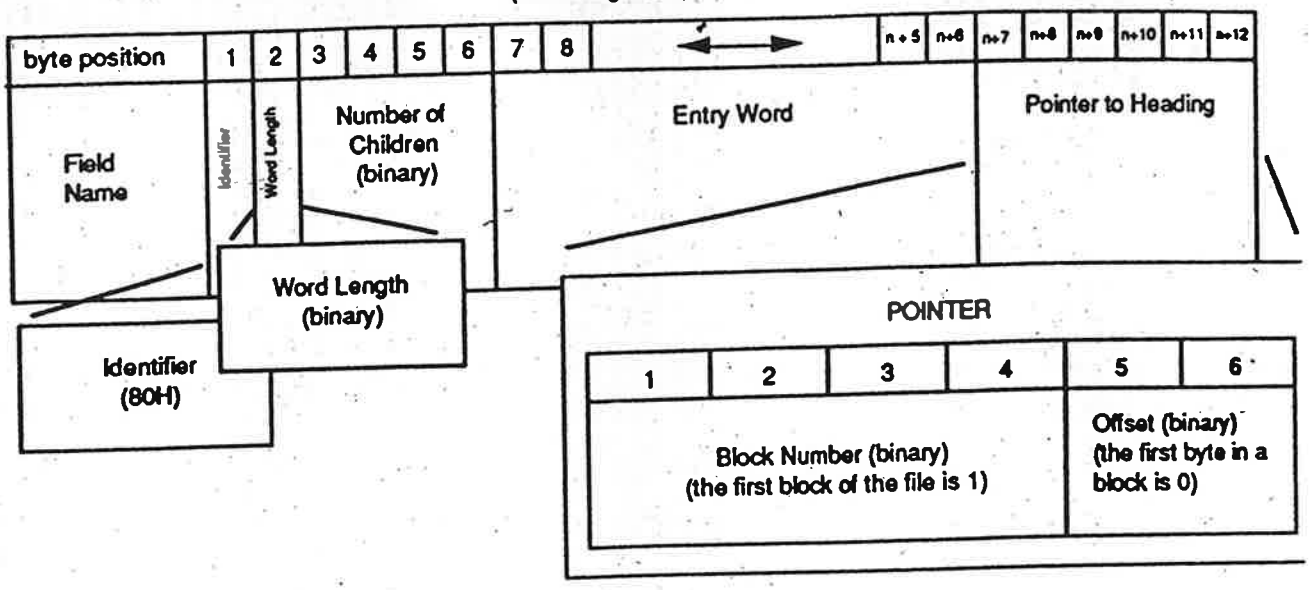
17.1.4.3 Keyword Search Entry -Bottom Level with Group Entry

A keyword index group entry points to a number of text segments which contain the same keyword. Each entry consists of a parent entry, that contains the entry word and a pointer to a list of headings, and a number of child entries that point to the data.

KEYWORD SEARCH ENTRY - BOTTOM LEVEL WITH GROUP ENTRY

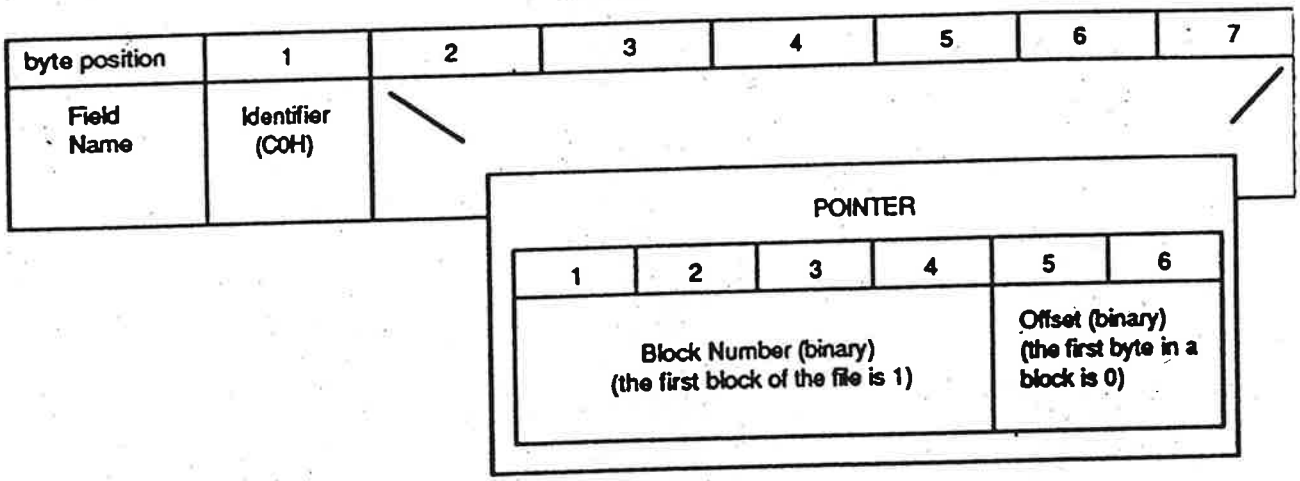
PARENT ENTRY

(word length = n)

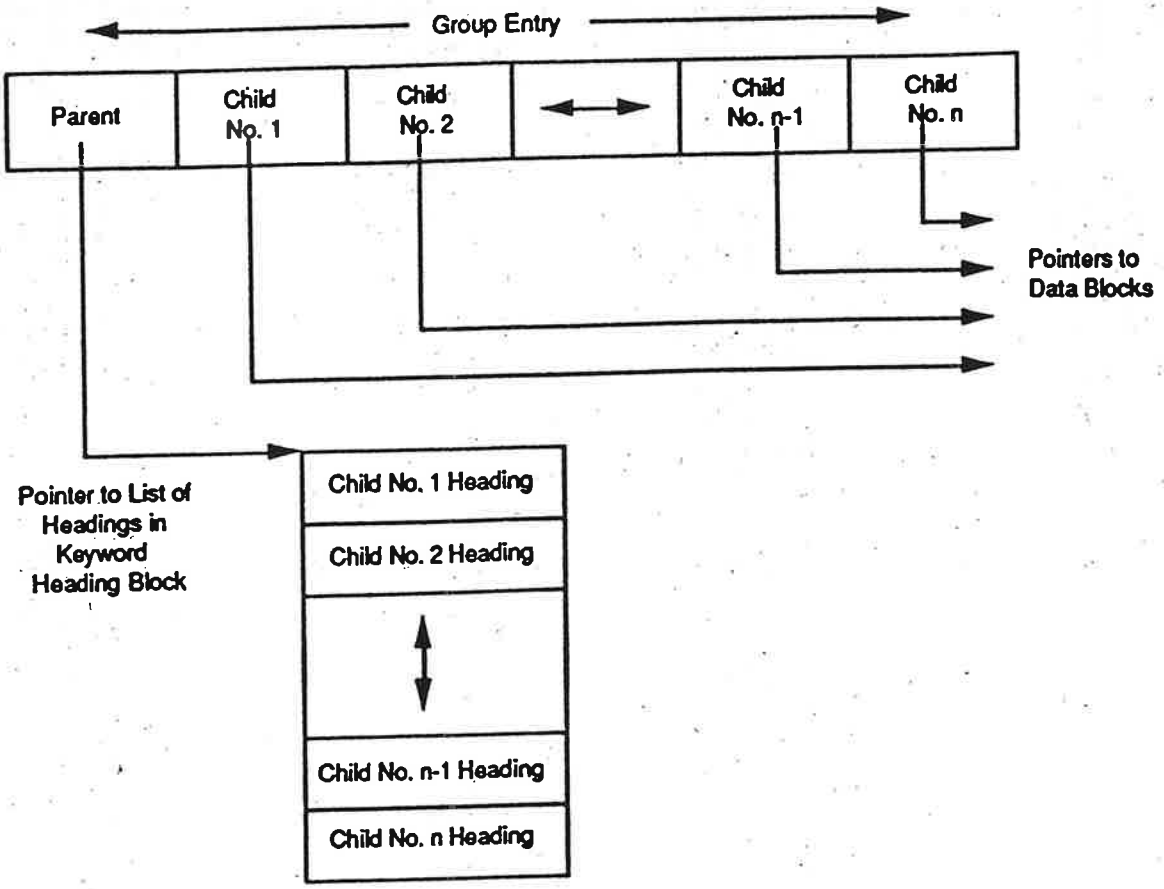


KEYWORD SEARCH ENTRY - BOTTOM LEVEL WITH GROUP ENTRY

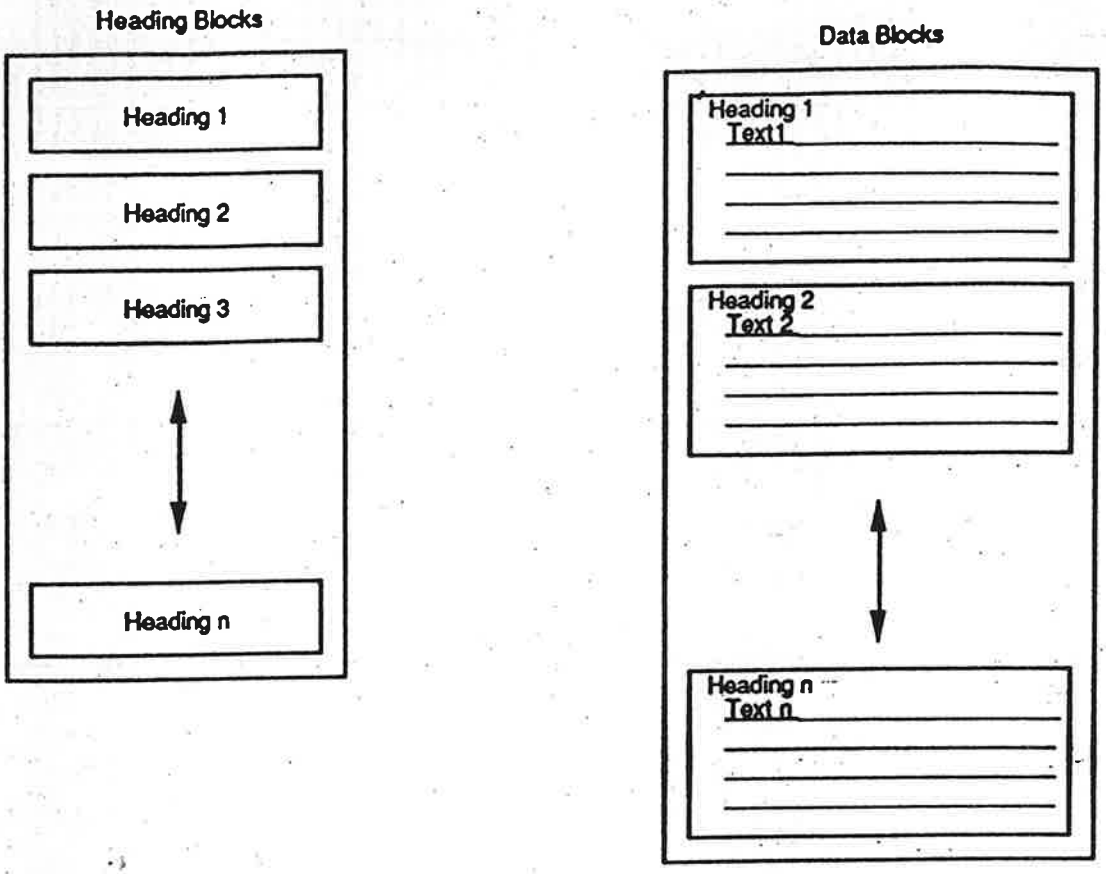
CHILD ENTRY



A group entry begins with the parent and is followed by the children.



20.1. Heading Block Logical Structure



20.1.1. Heading Blocks for Word Search and Endword Search

The list of headings for the Word Search and Endword Search should have one entry for each text segment that the search method can access. The entries in the list can be arranged in any order desired, however, arranging the list in ISO 8859 order should give the fastest search speed. Note that in the Endword Search method the entries in the index are spelled from the end toward the front, the entries in the heading list are spelled normally. The heading list for the Word Search and the Endword Search is pointed to from the start block. If the heading list for the Word Search and the Endword Search are identical, only one copy needs to be recorded, as long as the pointers from the start block are arranged accordingly.

20.1.2. Heading Blocks for Multi Search

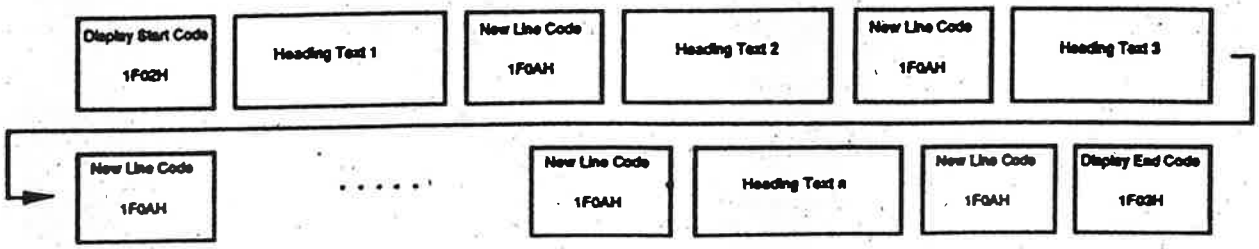
Each question in a Multi Search method has its own index and a separate heading list. The heading list is pointed to from the Multi Search Table. The structure of the heading list for both types of Multi Search indexes is identical to that for the Word Search and Endword Search. If the heading lists for different questions are identical, only one copy needs to be recorded, as long as the pointers from the Multi Search Table are correct. If the heading list for the Keyword Search and/or the Endword Search is identical to that for a question in the Multi Search, that list can also be used.

20.1.3. Heading Blocks for Keyword Search

The heading list for the Keyword Search is somewhat different than the others. For a group entry in a Keyword Search index, the bottom level entry points to the beginning of a list of matching headings. Therefore, for each group entry at the bottom level of the keyword index there needs to be a list of headings; for a single entry in the index, there is only one heading. Therefore, there may be many copies of any single heading in the keyword heading list.

20.2. Heading Blocks Physical Structure

HEADING BLOCKS PHYSICAL STRUCTURE



20.2.1. Display Start Code

Each heading list must begin with the Display Start Code (1F02H).

20.2.2. Heading Text

The text for the heading can be any length. However, in the base case player the headings will be truncated and a maximum of 28 characters will be displayed The Heading Text may contain characters in the standard character set, as well as extended characters. The headings should be written to allow the user to easily choose the appropriate text segment to view.

20.2.3. New Line Code

Each Heading text should be followed by the New Line Code (1F0AH).

20.2.4. Display End Code

The last heading in the list should be followed by the Line Feed Code and the Display End Code (1F03H).

20.2.5. Block Boundaries

There are no limitations concerning how entries that cross block boundaries should be split, they can be split at any location.

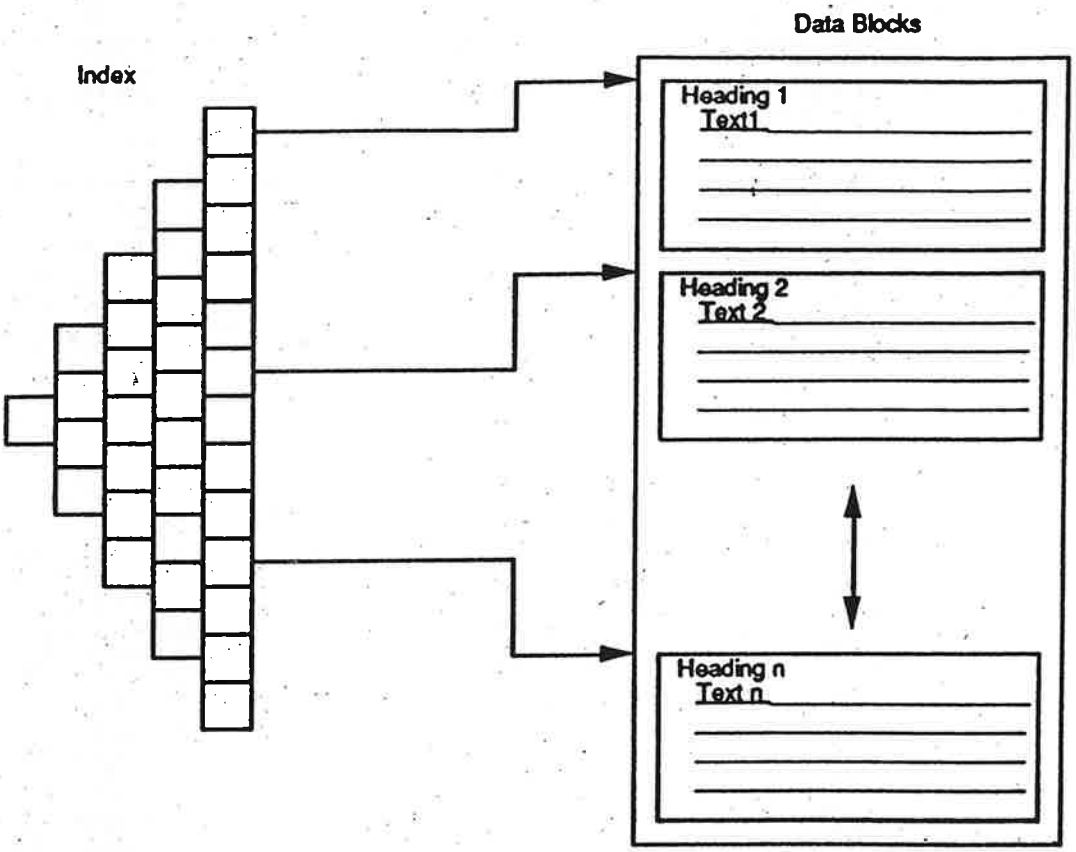
20.2.6. Margin

After the Display End code in a heading list, the remainder of the final block should be filled with 00H.

21. Data Blocks

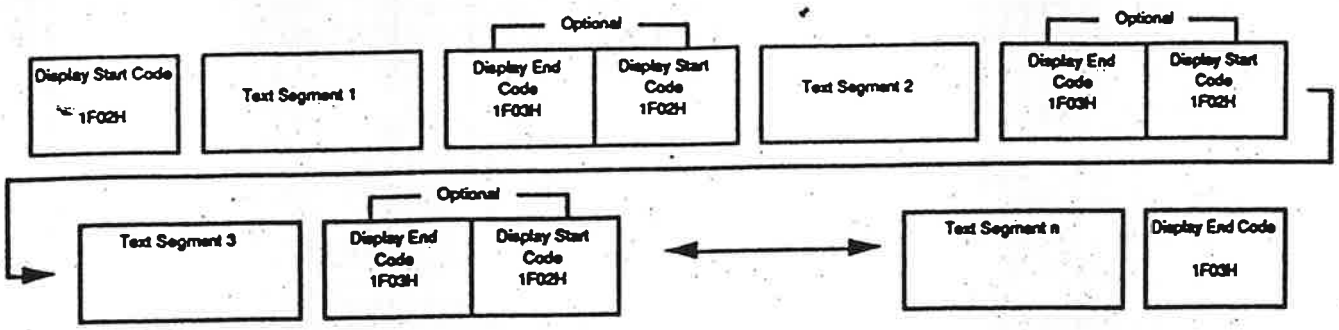
The data blocks hold the actual information contents of the EB disc (as compared to the indexes, or the headings). The data blocks are organized as text segments; each text segment consists of a heading and text that follows it. The text may be of any length desired. The search methods and their associated indexes are used to find the text segments that contain the information that is desired by the user. Each of the search methods may point to all of the text segments, or different text segments may be used for different search methods if it better matches the needs of the user of the EB disc.

21.1. Data Block Logical Structure

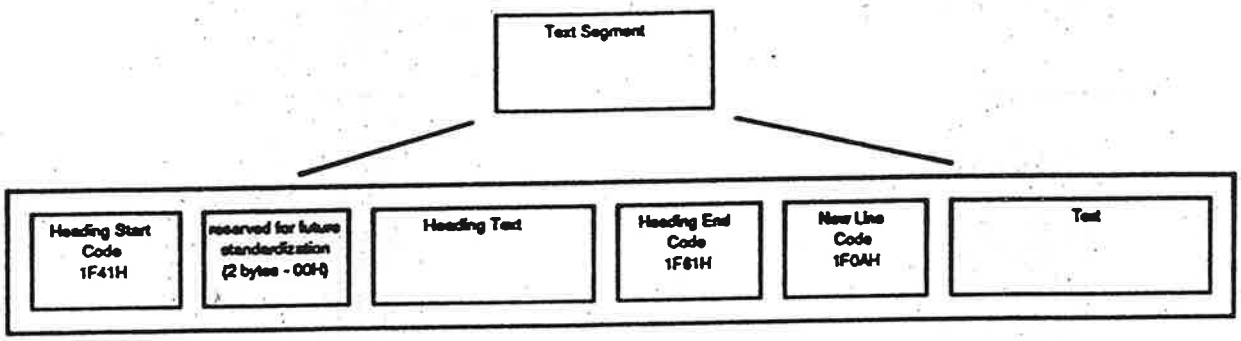


21.2. Data Blocks Physical Structure

DATA BLOCKS PHYSICAL STRUCTURE



TEXT SEGMENT PHYSICAL STRUCTURE



21.2.1. Display Start Code

The first data block must begin with the Display Start Code (1F02H). Additionally, the Display Start Code, along with the associated Display End Code (1F03H), may be used to separate text segments. If the codes are not used to separate segments, then the user can scroll the screen from one text segment into another. Using the codes prohibits this function.

21.2.2. Text Segment

The text segment is the basic unit of information in an EB disc. The search methods are used to find specific text segments. The text segment itself consists of a heading and its associated text.

21.2.2.1 Heading Start Code

The text segment begins with the Heading Start Code (1F41H). Search indexes must point to the first byte of the Heading Start Code. This code should be followed by 2 bytes of 00H, these bytes are reserved for future standardization.

21.2.2.2 Heading Text

The heading text is what will appear on the screen when the text segment is displayed. It must be 30 bytes or less. The heading text can consist of standard characters and extended characters (control codes cannot be used).

21.2.2.3 Heading End Code

The heading text should end with the Heading End Code (1F61H).

21.2.2.4 New Line Code

The Heading End Code should be followed by the New Line Code (1F0AH) so that the text itself begins on a new line.

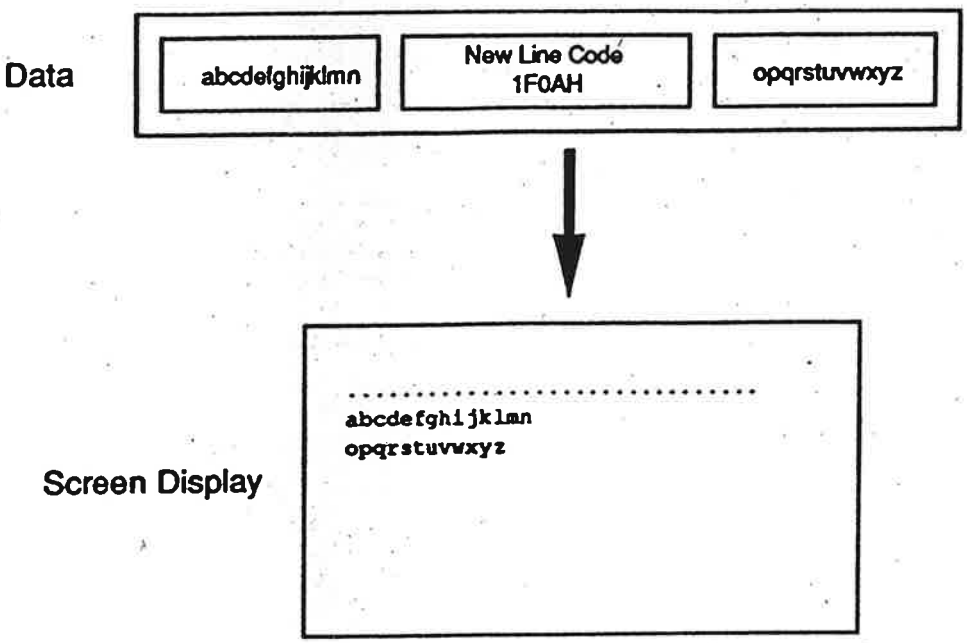
21.2.2.5 Text

The text is the information content of the text segment. It consist of standard characters, extended characters, and control codes to format the display. The base case display is 30 characters wide and the text should be formatted to display the information effectively on that width screen. In other applications the EB disc information may be displayed on wider screens (for example an 80 character wide computer screen).

21.2.2.6 Control Codes

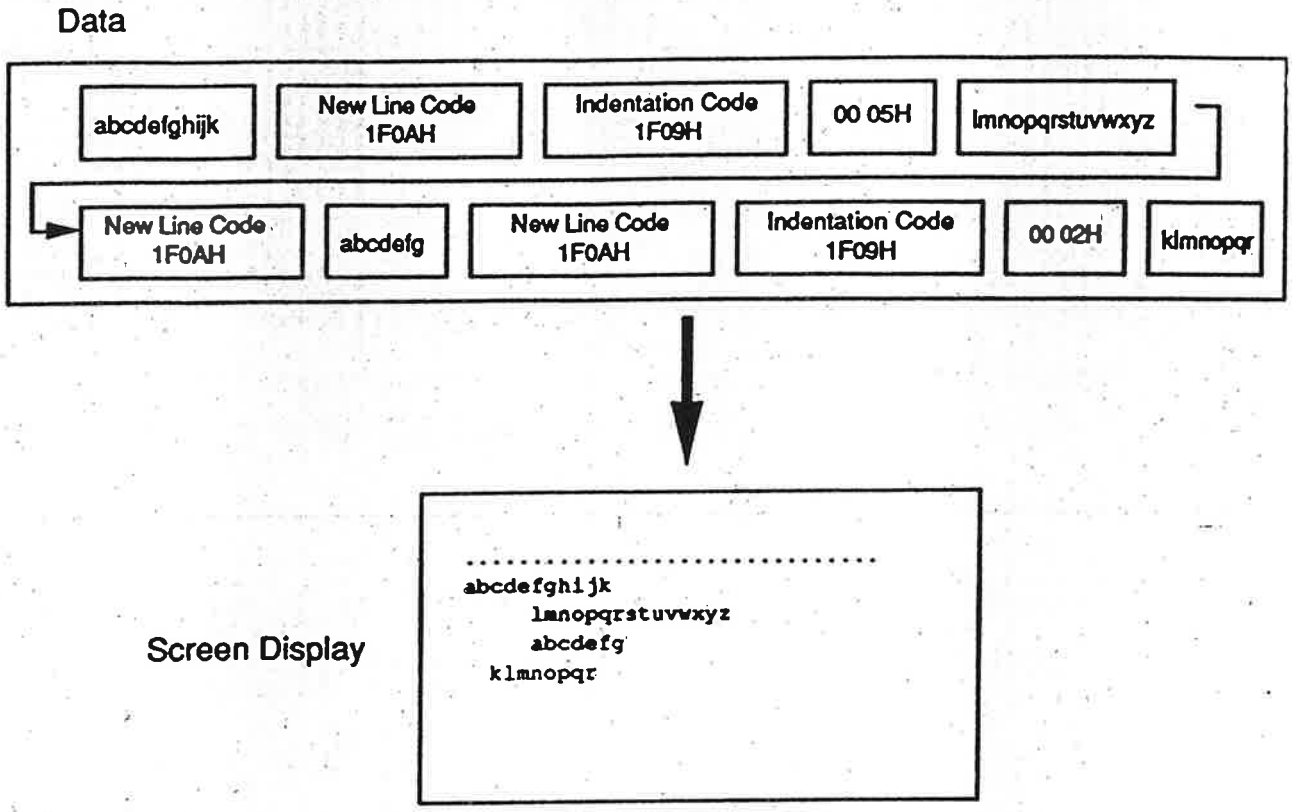
Control codes are inserted in the text to control the format of the display on the screen. The display software will automatically wrap words to the following line and remove spaces from the left hand margin. Additionally, a hidden hyphen code can be inserted to split and hyphenate words at the right hand margin. A soft space character (20H) will be removed to line up words at the left hand margin. A hard space code (A0H) can be used if indenting is required.

New Line Code (1F0AH)
The New Line Code forces a carriage return and line feed in the display.



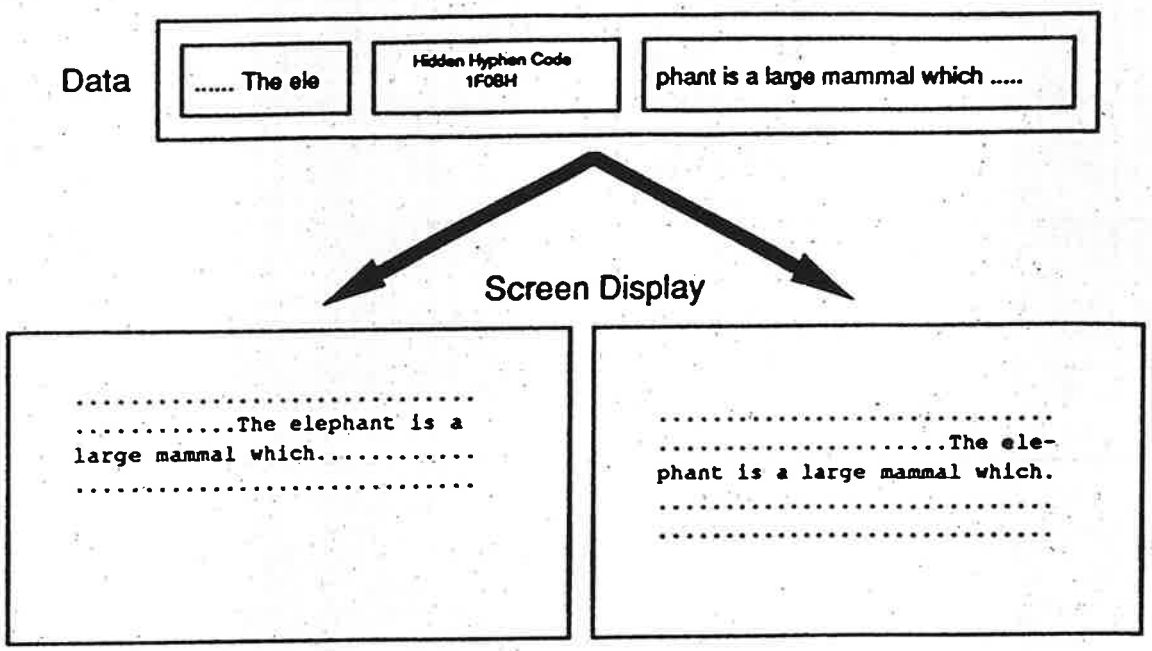
Indentation Code (1F09H)

The Indentation Code resets the left margin of the display. The Indentation Code is 1F09H; it is followed by a two byte binary value that specifies the starting column (columns are counted from 0). The Indentation Code should be preceded by a New Line Code. To reset the display to the far left margin 1F 09 00 00H should be used.



Hidden Hyphen Code (1F0BH)

Normally the last word of a line will be wrapped to the following line if it will not fit. An optional Hidden Hyphen Code can be inserted into long, multi-syllable words. This allows for splitting and hyphenating a word if it is on the left hand margin. For the purpose of word wrapping, a word is considered to be delimited by a soft space (20H) and/or a Hidden Hyphen Code. The base case screen for the EB standard is 30 columns wide; it is suggested that hidden hyphens be inserted based on 30 column formatting of the data.



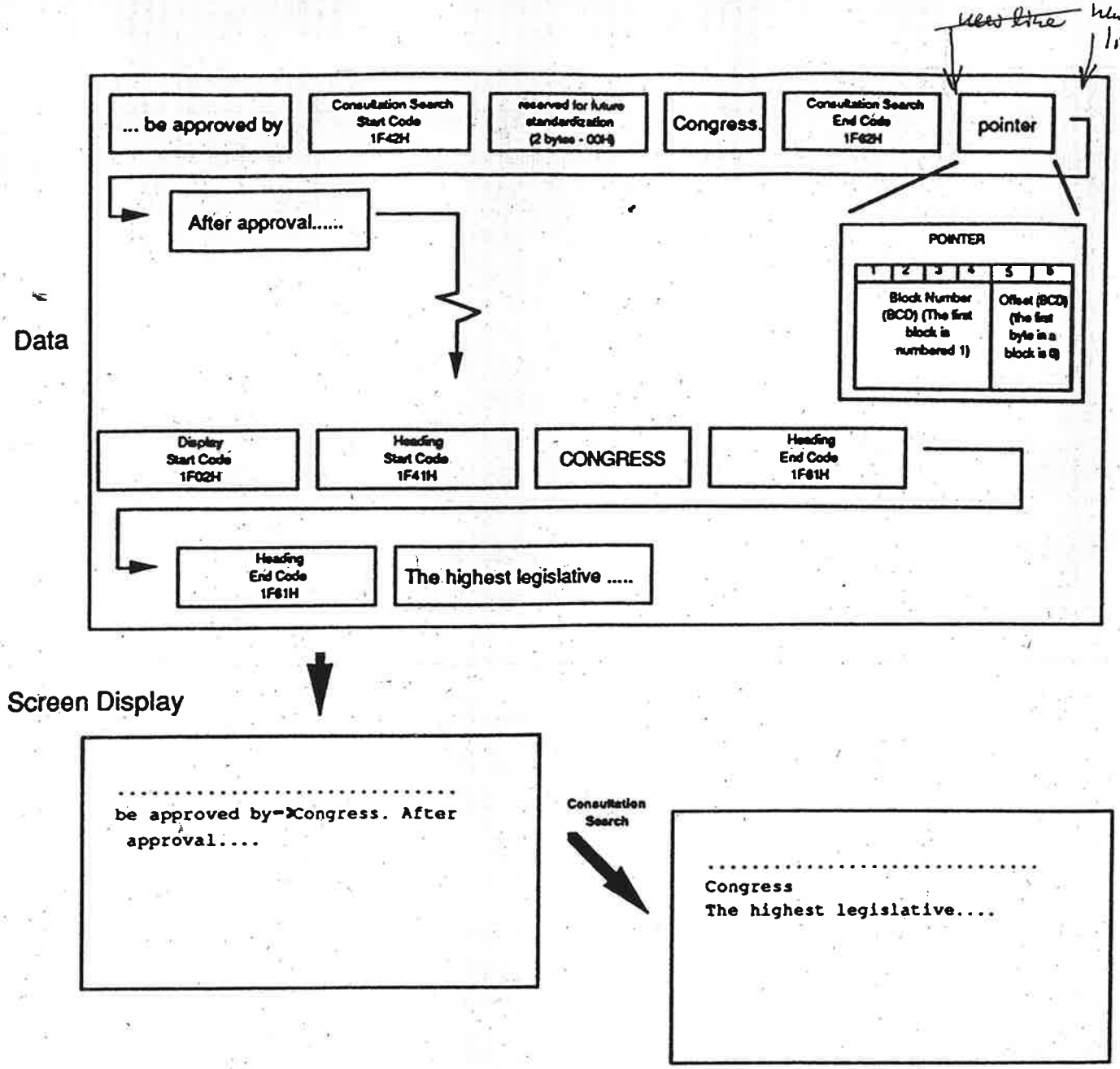
Soft Space (20H) and Hard Space (A0H)

A normal space character (20H) is considered to be a soft space. It is used to delimit words for the purpose of word wrapping, and soft spaces will be removed from the left hand margin if they would normally appear there. A hard space character (A0H) is also provided. The hard space is considered a "no break space" and therefore words will not be line-wrapped at a hard space character. Also, hard space characters will not be removed from the left hand margin, therefore they can be used for indenting.

Consultation Start Code (1F42H) and Consultation End Code (1F62H)
The Consultation Search method allows a jump from one point in the text of an EB disc to another text segment. By pushing the "escape" key, the user can return to the original text. Implementing the Consultation Search requires inserting Consultation Search codes and a pointer into the body of the text. The presence of a Consultation Search is indicated by an arrow in the text. If there are several consultations searches on a page, the user can selected the one that is desired; the selected one is indicated by the arrow being highlighted.

The consultation codes are used for jumping from text to text. With the addition of graphics support, the Text MIED is included. Text to graphics as well as text to text jumps can be incorporated using the Text MIED data structure. A Consultation Search and a Text MIED with a text to text jump are functionally identical.

WARNING: For the base case player there can be only one Consultation Search per line on the screen (30 character wide screen). In the case of larger screens, more than one Consultation Search can be included on a line. During data formatting it is necessary to insure that with a 30 column display there is only one Consultation Search on any given line for the base case. If there is more than one Consultation Search on a line the user will be unable to select it. There are several ways to insure this in the data preparation process. The easiest way is to follow the Consultation Search End Code with a New Line Code. Another method is to insure that there are at least thirty display characters between any two Consultation Searches. Optionally the data formatting software can simulate the display and perform a check.



21.2.3. Display End Code

The end of the data should be followed by the Display End Code (1F03H). The Display End Code should always be preceded by a New Line Code (1F0AH). The Display End Code can also be used in conjunction with the Display Start Code to prohibit scrolling between text segments.

21.2.4. Block Boundaries

There are no limitations concerning how data that cross block boundaries should be split, they can be split at any location.

21.2.5. Margin

After the final Display End Code, the remainder of the final block should be filled with 00H.

22. Font Blocks

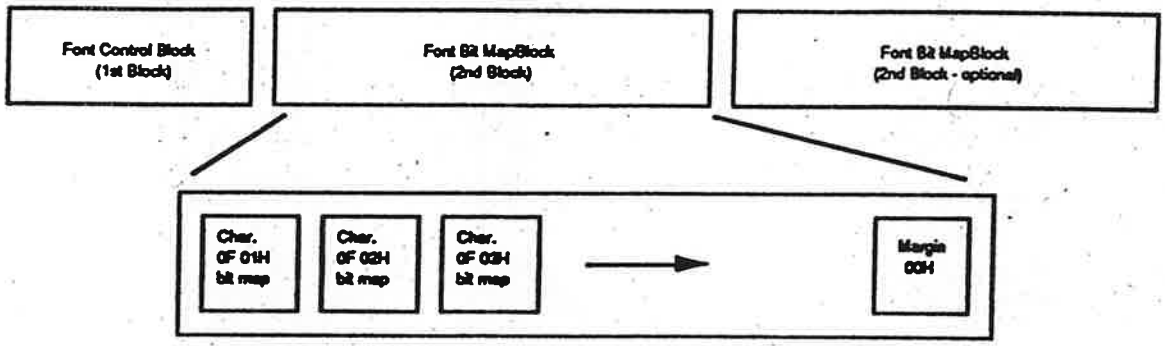
If any non-standard characters are used, bit maps for those characters must be provided on the disc. The characters are displayed on the screen in an 8 x 16 pixel array (in the future the standard might be extended to include other size bit maps). The bit maps are loaded when the EB volume is "opened" and stored in the hardware's memory.

Special characters are encoded in the data with a 2 byte code (0F XXH). The bit maps are stored on the disc in the order of the second byte of the code. The first special character bit map is character 0F 01H, the second is 0F 02H, etc., up to the final special character on the disc. A maximum of 255 special characters can be used (0F 01H to 0F FFH). No codes may be skipped between 0F 01H and the final special character on the disc.

22.1. Font Block Physical Structure

The special character font information is stored in the font blocks. The first block contains general information about the fonts. The following blocks contain the font bit maps. Each 8 x 16 pixel bit map takes 16 bytes, therefore 128 special characters can fit in one block. Up to 255 characters (2 blocks) can be used.

FONT BLOCKS PHYSICAL STRUCTURE



22.1.1. Font Control Block

FONT CONTROL BLOCK		
Byte Position	Field Name	Content
1	Font Software version	01H
2 - 8	(Reserved for future standardization)	00H
9	Number of Horzontal Pixels	08H
10	Number of Vertical Pixesl	10H
11 - 12	First Special Character Code	0F 01H
13 - 14	Number of Special Characters in the File	binary number
15 - 2048	(Reserved for future standardization)	00H

22.1.1.1 Version

The version number of the non-standard font software. At this time this should be set to 01H.

22.1.1.2 Number of Horizontal Pixels

The only character size supported at this time is 8 x 16 pixels. This field should be set to 08H.

22.1.1.3 Number of Vertical Pixels

The only character size supported at this time is 8 x 16 pixels. This field should be set to 10H.

22.1.1.4 First Byte of Special Character Code

Non-standard characters are encoded in the data as a two byte code consisting of 0F XXH. This field should be set to 0F 01H.

22.1.1.5 Number of Special Characters

Up to 255 special characters can be included on the disc. This field should be equal to the total number of special characters used on the disc.

22.1.2. Font Bit Map Blocks

The font bit maps are stored in the font bit map blocks. The bit maps must be stored in the order of their two byte code, with no gaps. They are stored as shown in the following example:

Appendix A. Standard Character Set

ISO 8859-1 Character Set

	2	3	4	5	6	7	A	B	C	D	E	F
0	*sp*	0	@	P	`	p	*sp*	°	À	•••	à	ð
1	!	1	A	Q	a	q	¡	±	Á	Ñ	á	ñ
2	"	2	B	R	b	r	¢	²	Â	Ò	â	ò
3	#	3	C	S	c	s	£	³	Ã	Ó	ã	ó
4	$	4	D	T	d	t	¤	´	Ä	Ô	ä	ô
5	%	5	E	U	e	u	¥	µ	Å	Õ	å	õ
6	&	6	F	V	f	v	•••	¶	Æ	Ö	æ	ö
7	'	7	G	W	g	w	§	·	Ç	×	ç	÷
8	(	8	H	X	h	x	¨	¸	È	Ø	è	ø
9	)	9	I	Y	i	y	©	¹	É	Ù	é	ù
A	*	:	J	Z	j	z	ª	º	Ê	Ú	ê	ú
B	+	;	K	[	k	{	«	»	Ë	Û	ë	û
C	,	<	L	\	l	|	¬	1/4	Ì	Ü	ì	ü
D	-	=	M	]	m	}		1/2	Í	Ý	í	ý
E	.	>	N	^	n	~	®	3/4	Î	•••	î	•••
F	/	?	O	_	o	XX	•••	¿	Ï	ß	ï	ÿ

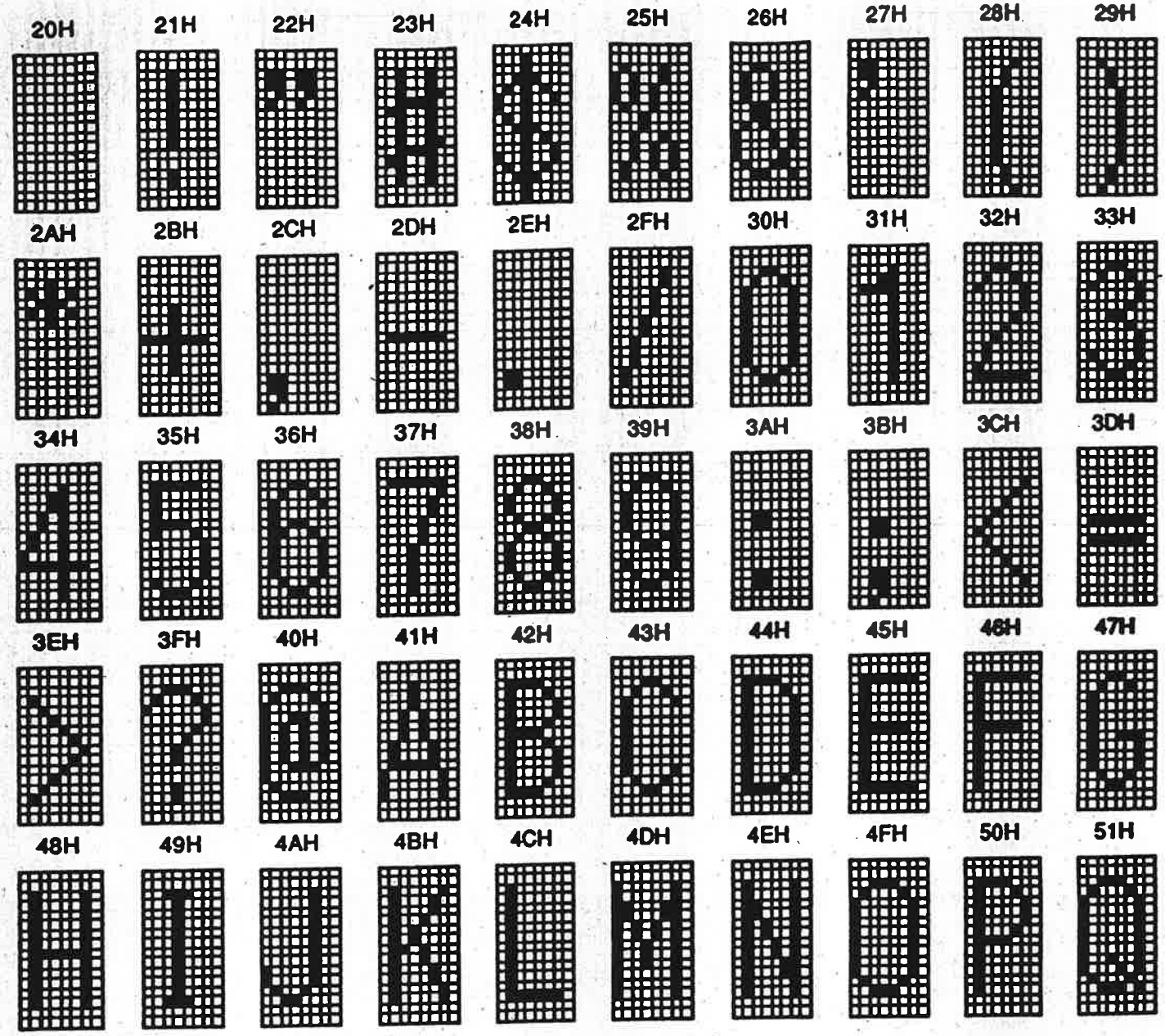
Notes: **XX** character not defined in ISO 8859-1

••• not shown, character as defined in ISO 8859-1 and as indicated in Appendix B

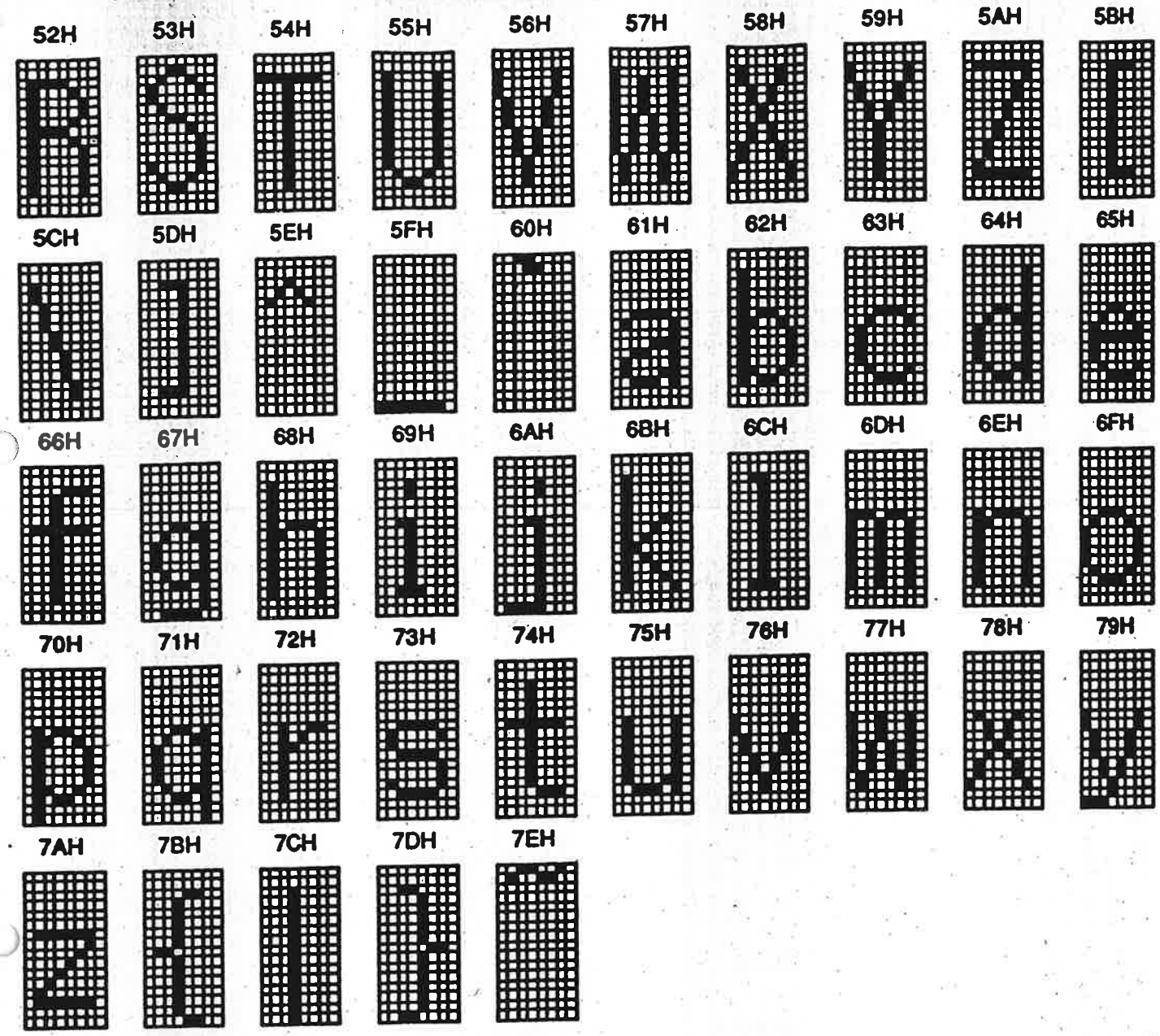
20H is considered a Soft Space, A0H is considered a Hard Space

DAH is the same as D2H (*hyphen*), a control code is used for Hidden Hyphens

Appendix B.1 Character Bit Maps (20H - 51H)



Appendix B.2 Character Bit Maps (52H - 7EH)



Appendix C. Input Characters

Char.	ISO 8859 Code
SP	20H
-	2D
0	30
1	31
2	32
3	33
4	34
5	35
6	36
7	37
8	38
9	39
A	41
B	42
C	43
D	44
E	45
F	46
G	47
H	48
I	49

Char.	ISO 8859 Code
J	4AH
K	4B
L	4C
M	4D
N	4E
O	4F
P	50
Q	51
R	52
S	53
T	54
U	55
V	56
W	57
X	58
Y	59
Z	5A
Ä	C4
Å	C5
Æ	C6
Ç	C7

Char.	ISO 8859 Code
É	CBH
Ñ	D1
Ö	D6
ø	D8
Ü	DC
ß	DF

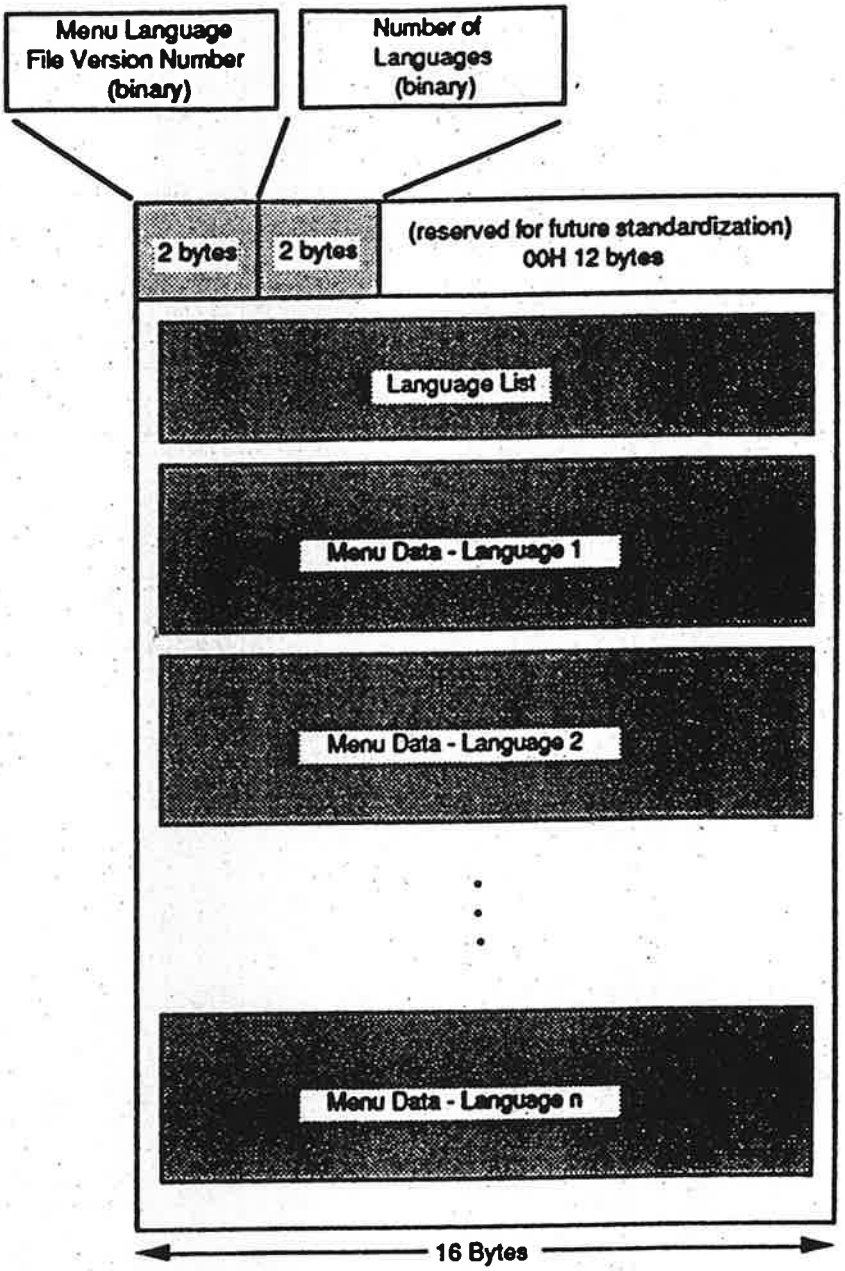
Appendix D. Control Codes

Function	Code	Start Code	End Code
Special Character Code	0FXXH		
Display		1F02H	1F03H
Indent	1F09H		
New Line	1F0AH		
Prohibit Division		1F10H	1F11H
Pointer to Bit Map Entry		1F31H	1F51H
Jump to Graphics Entry		1F32H	1F52H
Time Delay Entry		1F34H	1F54H
Heading		1F41H	1F61H
Consultation Search		1F42H	1F62H
Menu Entry		1F43H	1F63H
MIED Entry		1F45H	1F65H
Hidden Hyphen	1F0BH		

Appendix E - Language File

The language file contains menu information for a number of languages. A standard file will be supplied by Sony and this file must be used unaltered.

E.1 File Format


Menu Language File Version Number (binary)
Number of Languages (binary)
2 bytes
2 bytes
(reserved for future standardization) 00H 12 bytes
Language List
Menu Data - Language 1
Menu Data - Language 2
Menu Data - Language n
16 Bytes

E.1.1. Menu Language File Version Number

The version number of the Menu Language File. At this time it should be set to 0001H (16 bit binary number).

E.1.2. Number of Languages

The total number of different languages included in the file (16 bit binary number).

E.1.3. Language List

A list of the language names included in the file. Each language has a language number associated with it. The language list can be displayed on the screen to allow changing of the default menu language.. The format of this section of the file is as follows.:

NON-ENGLISH NAMES WILL BE FINALIZED WITH THE NEXT RELEASE

Language List		
Byte Position	Field Name	Content
1	Language 1 (English) Number	00H
2 to 16	Language 1 (English) Name	"English"
17	Language 2 (French) Number	01H
18 to 32	Language 2 (French)Name	"Français"
33	Language 3 (German) Number	02H
34 to 48	Language 3 (German) Name	"Deutsch"
49	Language 4 (Italian) Number	03H
50 to 64	Language 4 (Italian) Name	"Italiano"
65	Language 5 (Spanish) Number	04H
66 to 80	Language 5 (Spanish)Name	"Español"
81	Language 6 (Japanese) Number	05H
82 to 96	Language 6 (Japanese) Name	"Japanese"
97	Language 7 (Danish) Number	06H
98 to 112	Language 7(Danish) Name	
113	Language 8 (Finnish) Number	07H
114 to 128	Language 8 (Finnish) Name	
129	Language 9 (Swedish) Number	08H

130 to 144	Language 9 (Swedish) Name	
145	Language 10 (Norwegian) Number	09H
146 to 160	Language 10 (Norwegian) Name	
161	Language 11 (Dutch) Number	0AH
162 to 176	Language 11 (Dutch) Name	
177	Language 12 (Portuguese) Number	0BH
178 to 192	Language 12 (Portuguese) Name	

E.1.4. Language x Number

Each language in the file is has a number assigned to it. The numbers are represented as 8 bit binary numbers. The language list numbers should start at 00H and progressive successively, with no missing numbers.

E.1.5. Language Name

The language names can use any character in the ISO-8859 character set. Special characters and control codes are not allowed. The maximum length of a language name is 15 bytes. The remainder of the field should be filled with 00H. Japanese is represented in "shift JIS" code.

E.1.6. Menu Data Language x

The specific menu commands for a language are encoded in a 912 byte data structure of the following format. The menu language data structures must be in the same order as the language list.

Language File Menu Commands		
Byte Position	Field Name	Content
1	Menu Language Number	binary number
2 to 16	Menu Language Name	ISO-8859
17	"Word Search" Command Code	00H
18 to 37	"Word Search" text	ISO-8859
38 to 48	null (reserved for future standardization)	00H
49	"Endword Search" Command Code	01H
50 to 69	"Endword Search" text	ISO-8859
70 to 80	null (reserved for future standardization)	00H
81	"Keyword Search" Command Code	02H

82 to 101	"Keyword Search" text	ISO-8859
102 to 112	null (reserved for future standardization)	00H
113	"Menu Search" Command Code	03H
114 to 133	"Menu Search" text	ISO-8859
134 to 144	null (reserved for future standardization)	00H
145	"Multi-Search" Command Code	04H
146 to 165	"Multi-Search" text	ISO-8859
166 to 176	null (reserved for future standardization)	00H
177	"Graphic Search" Command Code	05H
178 to 197	"Graphic Search" text	ISO-8859
198 to 208	null (reserved for future standardization)	00H
209	"This Electronic Book contains:" Command Code	20H
210 to 239	"This Electronic Book contains:" text	ISO-8859
240	null (reserved for future standardization)	00H
241	"Enter the word" Command Code	21H
242 to 271	"Enter the word" text	ISO-8859
272	null (reserved for future standardization)	00H
273	"Enter the words" Command Code	22H
274 to 303	"Enter the words" text	ISO-8859
304	null (reserved for future standardization)	00H
305	"Successful" Command Code	23H
306 to 322	"Successful" text	ISO-8859
323 to 336	null (reserved for future standardization)	00H
337	"entry" Command Code	24H
338 to 347	"entry" text	ISO-8859
348 to 368	null (reserved for future standardization)	00H
369	"entries" Command Code	25H
370 to 379	"entries" text	ISO-8859
380 to 400	null (reserved for future standardization)	00H
401	"Search unsuccessful" Command Code	26H
402 to 431	"Search unsuccessful" text	ISO-8859

432	null (reserved for future standardization)	00H
433	"Push the F4 key" Command Code	27H
434 to 463	"Push the F4 key" text	ISO-8859
464	null (reserved for future standardization)	00H
465	"Please insert the disc" Command Code	28H
466 to 495	"Please insert the disc" text	ISO-8859
496	null (reserved for future standardization)	00H
497	"Cannot read the disc" Command Code	29H
498 to 527	"Cannot read the disc" text	ISO-8859
528	null (reserved for future standardization)	00H
529	"Re-insert the disc" Command Code	2AH
530 to 556	"Re-insert the disc" text	ISO-8859
557 to 560	null (reserved for future standardization)	00H
561	"Clean the disc" Command Code	2BH
562 to 588	"Clean the disc" text	ISO-8859
589 to 592	null (reserved for future standardization)	00H
593	"The disc inserted is not an EB" Command Code	2CH
594 to 623	"The disc inserted is not an EB" text	ISO-8859
624	null (reserved for future standardization)	00H
625	"Searching..." Command Code	2DH
626 to 655	"Searching..." text	ISO-8859
656	null (reserved for future standardization)	00H
657	"Now charging the battery" Command Code	2EH
658 to 687	"Now charging the battery" text	ISO-8859
688	null (reserved for future standardization)	00H
689	"(except for the dry battery)" Command Code	2FH
690 to 719	"(except for the dry battery)" text	ISO-8859
720	null (reserved for future standardization)	00H
721	"Charge complete" Command Code	30H
722 to 751	"Charge complete" text	ISO-8859
752	null (reserved for future standardization)	00H

753	"The battery is empty" Command Code	31H
754 to 783	"The battery is empty" text	ISO-8859
784	null (reserved for future standardization)	00H
785	"Battery charge" Command Code	32H
786 to 805	"Battery charge" text	ISO-8859
806 to 816	null (reserved for future standardization)	00H
817	"Cannot charge the battery" Command Code	33H
818 to 847	"Cannot charge the battery" text	ISO-8859
848	null (reserved for future standardization)	00H
849	"Select menu language" Command Code	34H
850 to 879	"Select menu language" text	ISO-8859
880	null (reserved for future standardization)	00H
881	"MENU" Command Code	35H
882 to 891	"MENU" text	ISO-8859
892 to 912	null (reserved for future standardization)	00H

E.1.6.1 Menu Language Number

The menu language number corresponding to the number in the language list. The menu language data structures should be arranged successively, starting with language number 00H.

E.1.6.2 Menu Language Name

The language name should be the same as that in the language list. Any character in the ISO-8859 character set can be used. Special characters and control codes are not allowed. The maximum length of a language name is 15 bytes. The remainder of the field should be filled with 00H. Japanese is represented in "shift JIS" code.

E.1.6.3 "xyz" Command Code

There are 28 command strings that must be provided for each language. The strings are numbered with a command code from 00H to 05H and 20H to 35H.

E.1.6.4 "xyz" Text

A string for each command string in each language must be provided. Any character in ISO-8859 can be used; special characters and control codes cannot be used.

E.1.6.5 Null

For each string there is a specified maximum length (based on display on a 30 character display). If the string is shorter that the maximum, the remainder should be filled with 00H.

Appendix F.1 - Language File: English

	Code	English Menu Entry	Maximum number of bytes
Search Method Names	00H	Word Search	20
	01H	Endword Search	20
	02H	Keyword Search	20
	03H	Menu Search	20
	04H	Multi-Search	20
	05H	Graphic Search	20
Menus	20H	This Electronic Book contains:	30
	21H	Enter the word	30
	22H	Enter the words	30
	23H	Successful	17
	24H	entry	10
	25H	entries	10
	26H	Search unsuccessful	30
	27H	Push the F4 key	30
	28H	Please insert the disc	30
	29H	Cannot read the disc	30
	2AH	Re-insert the disc	27
	2BH	Clean the disc	27
	2CH	The disc inserted is not an EB	30
	2DH	Searching...	30
	2EH	Now charging the battery	30
	2FH	(except for dry battery)	30
	30H	Charge complete	30
	31H	The battery is empty	30
	32H	Battery charge	20
	33H	Cannot charge the battery	30
	34H	Select the menu language	30
	35H	MENU	10

Appendix F.2 - Language File: French

	Code	French Menu Entry
Language Name	n/a	Français
Search Method Names	00H	Recherche d'un mot
	01H	Recherche par fin de mot
	02H	Recherche par mots cléfs
	03H	Recherche par menu
	04H	Recherche multiple
	05H	Recherche graphique
Menus	20H	Sommaire
	21H	Entrer le mot
	22H	Entrer les mots
	23H	Opération réussie
	24H	Entrée
	25H	Entrées
	26H	La recherche ne peut pas aboutir
	27H	Appuyer sur la touche F4
	28H	Insérer la disquette
	29H	Disquette illisible
	2AH	Insérer de nouveau la disquette
	2BH	Nettoyer la disquette
	2CH	Cette disquette n'est pas compatible
	2DH	Recherche en cours...
	2EH	Chargement de la BATT en cours
	2FH	(Sauf pour les piles sèches)
	30H	Charge effectuée
	31H	La batterie est déchargée
	32H	Charge de la batterie
	33H	Ne peut pas charger la batterie
	34H	Sélectionner la langue du menu
	35H	MENU

Appendix F.3 - Language File: German

	Code	German Menu Entry
Language Name	n/a	Deutsch
Search Method Names	00H	Wort-Suche
	01H	Wortendsuche
	02H	Begriffsuche
	03H	Menu-Suche
	04H	Kominierte Suche
	05H	Grafishe Suche
Menus	20H	Inhalt des Elektronishen Buches
	21H	Gewünschtes Wort eingeben
	22H	Enter the words
	23H	Eingabe gefunden
	24H	Eingabe
	25H	Eingaber
	26H	Eingabe nicht auffindabar
	27H	F4 Taste drücken
	28H	Disc einlegen
	29H	Disc nicht lesbar
	2AH	Disc neu einlegen
	2BH	Disc reinigen
	2CH	Disc ist kein EB
	2DH	Eingabe wird gesucht...
	2EH	Akku wird geladen
	2FH	(ausgenommen normale Batterien)
	30H	Aufladung beendet
	31H	Akku ist leer
	32H	Ladezustand
	33H	keine Ladung möglich
	34H	Wählen Sie die Menu-Sprache
	35H	MENU

Appendix F.4 - Language File: Italian

	Code	Italian Menu Entry
Language Name	n/a	Italiano
Search Method Names	00H	Ricerca di parola
	01H	Ricerca di fine parola
	02H	Ricerca di parola chiave
	03H	Ricerca di menu
	04H	Ricerca multipla
	05H	Ricerca grafica
Menus	20H	Il libro elettronico contiene
	21H	Inserire la parola
	22H	Inserire le parole
	23H	Riuscito
	24H	indirizzo
	25H	indirizzi
	26H	Ricerca fallita
	27H	Premere F4
	28H	Inserire il disco
	29H	Disco non leggibile
	2AH	Reinserire il disco
	2BH	Ripulire il disco
	2CH	Il disco inserito non è un EB
	2DH	Ricerca in corso...
	2EH	Batteria in carica
	2FH	(Eccetto per batteria a secco)
	30H	Carica competa
	31H	Batteria scarica
	32H	Carica batteria
	33H	Batteria non caricabile
	34H	Selezionare la lingua del menu
	35H	MENU

Appendix F.5 - Language File: Spanish

	Code	Spanish Menu Entry
Language Name	n/a	Español
Search Method Names	00H	Busca de palabra
	01H	Busca final palabra
	02H	Busca palabra clave
	03H	Busca menú
	04H	Multi-búsqueda
	05H	Busca gráfica
Menus	20H	El Libro Electrónico contiene:
	21H	Introducir la palabra
	22H	Introducir la palabras
	23H	Aceptado
	24H	acceso
	25H	accesos
	26H	Búsqueda fallida
	27H	Pulsar la tecla F4
	28H	Por favor, inserte el disco
	29H	No puedo leer el disco
	2AH	Vuelva a insertar el disco
	2BH	Limpie el disco
	2CH	El disco insertado no es un LE
	2DH	Buscando...
	2EH	Cargando la batería
	2FH	(Excepto para pila seca)
	30H	Carga concluida
	31H	La batería está agotada
	32H	Carga de batería
	33H	No se puede cargar la batería
	34H	Seleccione el idioma del menú
	35H	MENU

Appendix F.6 - Language File: Japanese

	Code	Japanese Menu Entry
Language Name	n/a	日本語
Search Method Names	00H	単語検索(前方一致)
	01H	単語検索(後方一致)
	02H	条件検索
	03H	ﾒﾆｭｰ検索
	04H	複合検索
	05H	ｸﾞﾗﾌｨｯｸ検索
Menus	20H	この電子ﾌﾞｯｸは
	21H	検索語を入力して下さい
	22H	検索語を入力して下さい
	23H	該当項目一覧
	24H	件
	25H	件
	26H	該当項目がありません
	27H	復帰を押すて下さい
	28H	ﾁﾞｽｸを入れて下さい
	29H	ﾁﾞｽｸが読めません
	2AH	ﾁﾞｽｸを入直して下さいれ
	2BH	ﾁﾞｽｸを拭いて下さい
	2CH	ﾁﾞｽｸが規格外です
	2DH	只今, 検索中
	2EH	現在, 充電中です
	2FH	注意, 乾電池は充電でき
	30H	電池が完了しました
	31H	電池が消耗してます
	32H	電池残量
	33H	充電できません
	34H	表示言語を選んで下さい
	35H	目次

Appendix F.7 - Language File: Danish

	Code	Danish Menu Entry
Language Name	n/a	Danish
Search Method Names	00H	Søg ord
	01H	Søg slutord
	02H	Søg nøgleord
	03H	Menu-søgning
	04H	Multi-søgning
	05H	grafisk opslag
Menus	20H	Den elektroniske bogs indhold
	21H	Indtast opslagord
	22H	Indtast opslagsord
	23H	Fundet
	24H	Artikel
	25H	Artikler
	26H	Ikke fundet
	27H	Tryk F4
	28H	Indsæt disken
	29H	Disken kan ikke ses
	2AH	Indsæt disken igen
	2BH	Rens disken
	2CH	Disk ikke en Elektronisk Bog
	2DH	Søger...
	2EH	Batteriet oplandes
	2FH	(Undtagen tørelement)
	30H	Batteriet er opladet
	31H	Batteriet er tomt
	32H	Batteriladning
	33H	Batteriet kan ikke oplades
	34H	Vælg menusprog
	35H	MENU

Appendix F.8 - Language File: Finnish

	Code	Finnish Menu Entry
Language Name	n/a	Finnish
Search Method Names	00H	Sanahaku
	01H	Loppuosahaku
	02H	Sanastohaku
	03H	Valikkohaku
	04H	Monihaku
	05H	Haku kuvasta
Menus	20H	Tämä elektr. kirja sisältää
	21H	Syötä sana
	22H	Syötä sanat
	23H	Onnistui
	24H	Hakusana
	25H	Hakusanat
	26H	Haku epäonnistui
	27H	Paina F4 näppäintä
	28H	Anna levy
	29H	Levyä ei voi lukea
	2AH	Anna levy uudelleen
	2BH	Puhdista levy
	2CH	Tämä levy ei ole elektr. kirja
	2DH	Etsin...
	2EH	Lataan akkua
	2FH	(Ei paristolle)
	30H	Lataus valmis
	31H	Akku on tyhj
	32H	Akun lataus
	33H	Akkua ei voi ladata
	34H	Valikon kieli
	35H	Valikko

Appendix F.9 - Language File: Swedish

	Code	Swedish Menu Entry
Language Name	n/a	Swedish
Search Method Names	00H	Sök på ord
	01H	Sök på sista ord
	02H	Sök på nyckelord
	03H	Sök via meny
	04H	Sök kombination
	05H	Sökning i bild
Menus	20H	Skivan innehåller:
	21H	Skriv ordet
	22H	Sriv orden
	23H	Sökningen klar
	24H	Artikel
	25H	Artiklar
	26H	Sökningen gav inget resultat
	27H	Tryck på F4
	28H	Sätt i skivan
	29H	Kan ej läsa skivan
	2AH	Sätt i skivan igen
	2BH	Rengör skivan
	2CH	Fel skivformat
	2DH	Söker...
	2EH	Laddning pågår
	2FH	(Gäller ej torrbatterier)
	30H	Laddingen klar
	31H	Batteriet är slut
	32H	Ackumulatorladdning
	33H	Kan inte ladda
	34H	Välj språk för menyn
	35H	MENY

Appendix F.10 - Language File: Norwegian

	Code	Norwegian Menu Entry
Language Name	n/a	Norwegian
Search Method Names	00H	Søk på ord
	01H	Søk på siste ord
	02H	Søk på nøkkelord
	03H	Søk i meny
	04H	Multisøk
	05H	Grakisk Søk
Menus	20H	Denne plate inneholder:
	21H	Skriv ordet
	22H	Skriv ordene
	23H	Søk vellykket
	24H	Stikkord
	25H	Stikkord
	26H	Ord ikke funnet
	27H	Trykk på F4-tasten
	28H	Sett inn platen
	29H	Platen kan ikke leses
	2AH	Sett inn platen igjen
	2BH	Rens platen
	2CH	Platen er ikke en EB
	2DH	Søker
	2EH	Batteri lades
	2FH	(Unntatt tørrbatteri)
	30H	Batteriet er ladet
	31H	Batteriet er utladet
	32H	Batterilader
	33H	Batteriet kan ikke lades
	34H	Velg språk i menyen
	35H	MENY

Appendix F.11 - Language File: Dutch

	Code	Dutch Menu Entry
Language Name	n/a	Dutch
Search Method Names	00H	Zoek naar woord
	01H	Zoek laatste woord
	02H	Zoek op trefwoord
	03H	Zoek naar menu
	04H	Algemene zoekactie
	05H	Zoek afbeelding
Menus	20H	Dit woordenboek bevat:
	21H	Tik hier woord in
	22H	Tik de woorden in
	23H	Gelukt
	24H	Artikel
	25H	Artikelen
	26H	Zoeken niet gelukt
	27H	Druk op F4
	28H	Plaats de cd in de drive
	29H	Lezen van de cd niet gelukt
	2AH	Plaats cd weer in drive
	2BH	Maak de cd schoon
	2CH	De cd in de drive is geen EB
	2DH	Programma zoekt
	2EH	De batterij wordt opgeladen
	2FH	(Behalve droge batterijen)
	30H	De batteril is opgeladen
	31H	De batterij is leeg
	32H	Laad batterij op
	33H	Opladen niet gelukt
	34H	Kies een taal voor het menu
	35H	MENU

Appendix F.12 - Language File: Portuguese

	Code	Portuguese Menu Entry
Language Name	n/a	Portuguese
Search Method Names	00H	Busca de palavras
	01H	Busca fim de plvras
	02H	Busca plvras. chaves
	03H	Busca do menu
	04H	Busca múltipla
	05H	Busca Gráfica
Menus	20H	Este Livro Eletrônico contém:
	21H	Entrar com a palavra
	22H	Entrar com as palavras
	23H	Sucesso
	24H	Entrada
	25H	Entradas
	26H	Busca sem sucesso
	27H	Pressionar a tecla F4
	28H	Favor introduzir o disco
	29H	Impossível de se ler o disco
	2AH	Pôr novamente o disco
	2BH	Limpar o disco
	2CH	Disco posto não é Livro Eletr.
	2DH	Em busca...
	2EH	Carregando a bateria
	2FH	(Exceto para baterias secas)
	30H	Carga completa
	31H	A bateria está descarregada
	32H	Carga de bateria
	33H	A bateria não é carregável
	34H	Selecionar a linguagem do menu
	35H	MENU